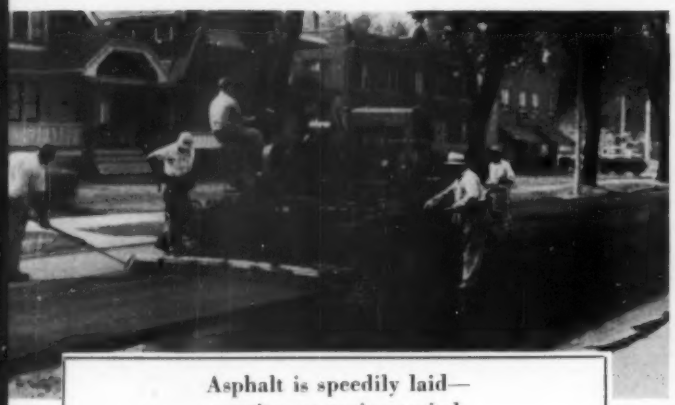
NOVEMBER 1959

The American City

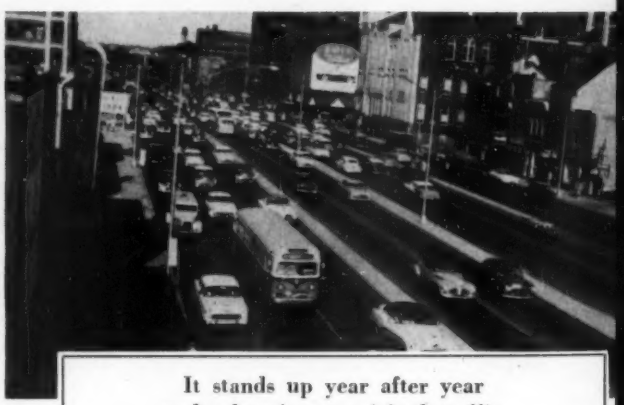
Mayor Edward L. Spellman and Plant Superintendent Lawrence Arthur, Lincoln, Illinois, (at right) examine their enlarged special-duty sewage purification plant. At left consulting engineers Charles Ritchie and Leonard Crawford. See pages 3 and 98.

Answering the question:

"Why ASPHALT paving for City Streets?"



Asphalt is speedily laid—
requires no curing period.



It stands up year after year
under heaviest municipal traffic.

Asphalt costs substantially less
than rigid paving.

Motorists appreciate Asphalt's
velvet-smooth riding quality.

These are some of the advantages of Asphalt paving which make it the ideal choice for city streets:

Because of the speed with which Asphalt is laid and since it is ready for use almost immediately, there is a minimum of inconvenience to traffic, business and residents.

The rugged durability of Asphalt paving has been demonstrated repeatedly under the heaviest street, bridge and tunnel traffic.

Since Asphalt costs substantially less than comparable rigid paving, it enables the city to construct a larger mileage of modern streets with available funds.

Motorists are unanimous in their preference for the velvet-smooth riding quality of resilient, joint-free Asphalt paving.

Two helpful brochures on Asphalt paving for city officials can be secured without obligation by writing our nearest office.

TEXACO INC., Asphalt Sales Div., 135 E. 42nd Street, New York 17

Boston 16 Chicago 4 Denver 1 Houston 1 Jacksonville 1 Minneapolis 3 Philadelphia 2 Richmond 11

TEXACO

REG. T.M.

TEXACO ASPHALT

The American City

NOVEMBER 1959

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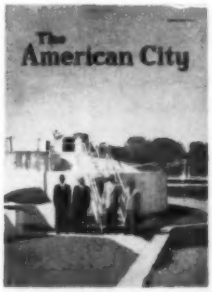


COVER PICTURE

The Lincoln, Ill. sewage purification plant has some big, unusual problems, for a small city. Chief among these is its top-heavy load of ground garbage contributed by nearby state institutions. To insure good operation with a minimum of trouble, the designers provided a Dorrco Vacuator to remove grease and some of the settleable solids. The consulting firm of Crawford, Murphy and Tilly, Springfield Ill., designed the plant and supervised its construction. The complete story is on page 98.

BELL SYSTEM TEAMWORK IS A VITAL FACTOR IN EFFICIENT, ECONOMICAL TELEPHONE SERVICE

Direct Distance Dialing is an example of the value of unified research, manufacture and operations

There are great advantages to the public and the nation in the way the Bell System is set up to provide telephone service. It is a very simple form of organization, with four essential parts.

Bell Telephone Laboratories does the research.

The Western Electric Company is the Bell System unit which does manufacturing, handles supply, and installs central office equipment.

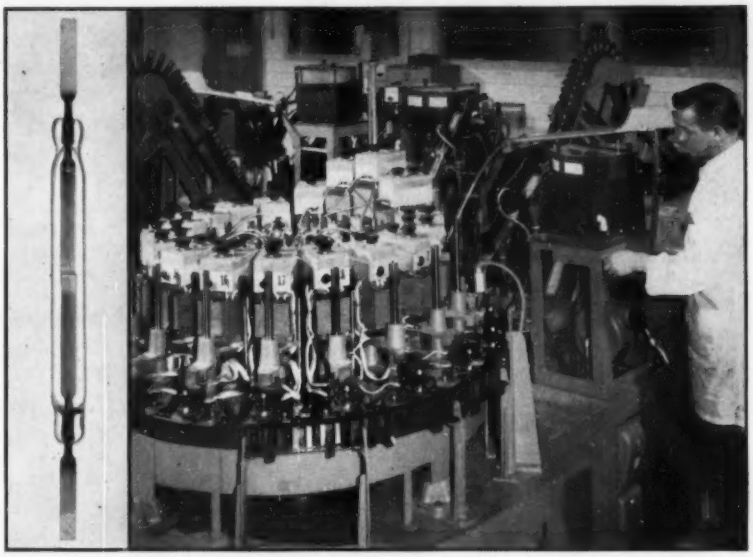
Twenty-one Bell Telephone operating companies provide service within their respective territories.

The American Telephone and Telegraph Company co-ordinates the whole enterprise and furnishes nationwide service over Long Distance lines.

Each is experienced and efficient in its own field. But the particular value of each is greatly extended because all four parts are in one organization and work together as a team.

Direct Distance Dialing—one of the greatest advances in the speed and convenience of telephone service—is an example of the value of this unified setup.

Already more than 8,000,000 telephone customers in more than 700 localities can dial direct to as many as 46,000,000 telephones throughout the country. Each month there are more. Millions of others can dial direct over shorter out-of-town distances. Calls as far as 3000 miles away go through in seconds.



EXAMPLE OF TEAMWORK. At left is new fast-moving switch (actual size) used in Direct Distance Dialing. Many of them go into action automatically every time you dial. Enclosed in gas-filled glass tubes to assure perfect contacts. Made to last 40 years. The result of Bell Telephone Laboratories and Western Electric working together to get the best and most economical design. At right is remarkable new machine, designed by Western Electric, which automatically assembles 360 switches an hour at a very small cost.

All of this didn't just happen. It called for years of intensive planning, the invention of wholly new machines and equipment, and the development of new operating and accounting techniques.

Research alone couldn't have done it. Neither manufacturing nor operations separately could have done it. And just money couldn't have done it, although it takes money and a lot of it for telephone improvement.

The simple truth is that it could never have been done so quickly and so economically without the unified setup of the Bell System.

For many a year it has given dynamic drive and direction to the business and provided the most and the best telephone service in the world.

BELL TELEPHONE SYSTEM

Volume 74 Number 11

The American City

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THE AMERICAN CITY is issued monthly by BUTTENHEIM PUBLISHING CORPORATION. Subscription rates: $4 in the U. S. and Canada; $7 in all other countries of the world. Single copies, 75 cents. Back copies, $1. Entered as second-class matter July 20, 1910, at the Post Office at New York, N. Y., under Act of March 3, 1879. Printed in the U. S. A. THE AMERICAN CITY is indexed regularly by Engineering Index, Inc., and the Readers Guide to Periodical Literature.

ASSOCIATED PUBLICATIONS

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LETTERS TO THE EDITOR

Metropolitan Government

Re your editorial "Metropolitan Government That Works" (September 1959 p. 7) and its reference to Nashville, allow me to clarify one point.

For your information, the voters in the City of Nashville, represented by me, cast their ballots almost 2:1 for the Metro Government. However, the voters outside the city and in the county areas voted 1½:1 against it. Since, under our state statute, it had to carry in both areas, the Metro proposal failed.

I am not quarrelling with you, have no desire for any correction of any kind, but merely wanted you to know the true facts about the voting on the Metro.

Please accept my congratulations upon one of the finest magazines being published in America today.

BEN WEST
Mayor
Nashville, Tenn.

I wish to congratulate you on your editorial in the September issue about various impractical movements to combine and consolidate all local government into some form of overall super-government ("Metropolitan Government That Works," September 1959, p. 7).

Many of these ideas are often proposed by impractical "experts" operating with misguided foundation funds.

The general idea has been turned down in many more cities than you mention in your editorial. Incidentally, Miami is a perfect illustration of how not to do it. They are now in endless confusion about various municipal services and embarrassing court decisions.

In 1952 the City of Atlanta and its surrounding counties adopted what was known as the "Plan of Improvement." Under it, certain city and county services were shifted or merged without in any way disturbing any local government. Since it was an intelligent merger or shifting of certain important functions of government which made sense, the people accepted it, and local officials helped make it a success. We think it still stands as the best adjustment of metropolitan government we know of in the nation. It did not set up any super-government and it did not rob the people of any section of local self-determination.

W. B. HARTSFIELD
Mayor
Atlanta, Ga.

Schools and Parks

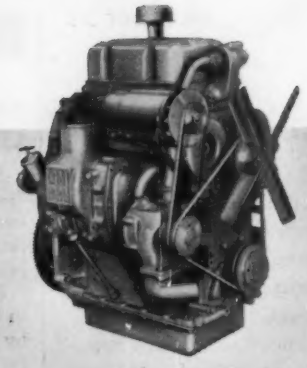
Mr. Lovelace's article "School-Park Coordination" points up one of the basic problems confronting planners today; that of providing sufficient park and playground space (October 1959, p. 106). His solution of combining school playgrounds with public park areas for full-time all year round use is generally sound. We must, however, concede some merit to the school board's objections. All too often, unsupervised full-time use of parks and playgrounds, especially those adjacent to schools and public buildings, results in unnecessary damage to equipment and buildings. Separating such facilities minimizes this.

The basic problem is still one of finding and providing park areas where they will be of greatest use and do the most good. Formulas based solely on population and ignoring character and density of areas are of limited value. Parks are most needed in the congested central city. Unfortunately, here land is at a premium and therefore park and playground areas are least available. Conversely, in the relatively uncongested suburbs, especially in areas still in process of development, the problem is far less acute. With homes built on relatively large lots in well designed park-like subdivisions, the need for public parks as such decreases proportionately. Also here, planning boards can usually, if they so desire, obtain dedication of sufficient lands for both school and park purposes from the developer at little or no cost. The big problem is maintenance. With the tightness of municipal funds, this is far from inconsequential.

Finally, we must take into consideration the state of flux of the entire recreation picture today. Witness the recent rapid expansion of private and semi-private recreation facilities. Country clubs, community centers, miniature golf ranges, bowling alleys and Disneylands seem to be springing up all over. The time may not be too distant

(Continued on page 18)

HOT



A demand item—in less than a year! In the short time since its introduction, the JOHN DEERE "440" CRAWLER with field-proved DIESEL ENGINE has established a new high standard of performance for industrial units in its class.

In building construction, logging, public works and other industrial fields, the new "440ICD" is now daily proving its right to the claim of . . .

"Low-Cost Power with a Heavyweight Punch"

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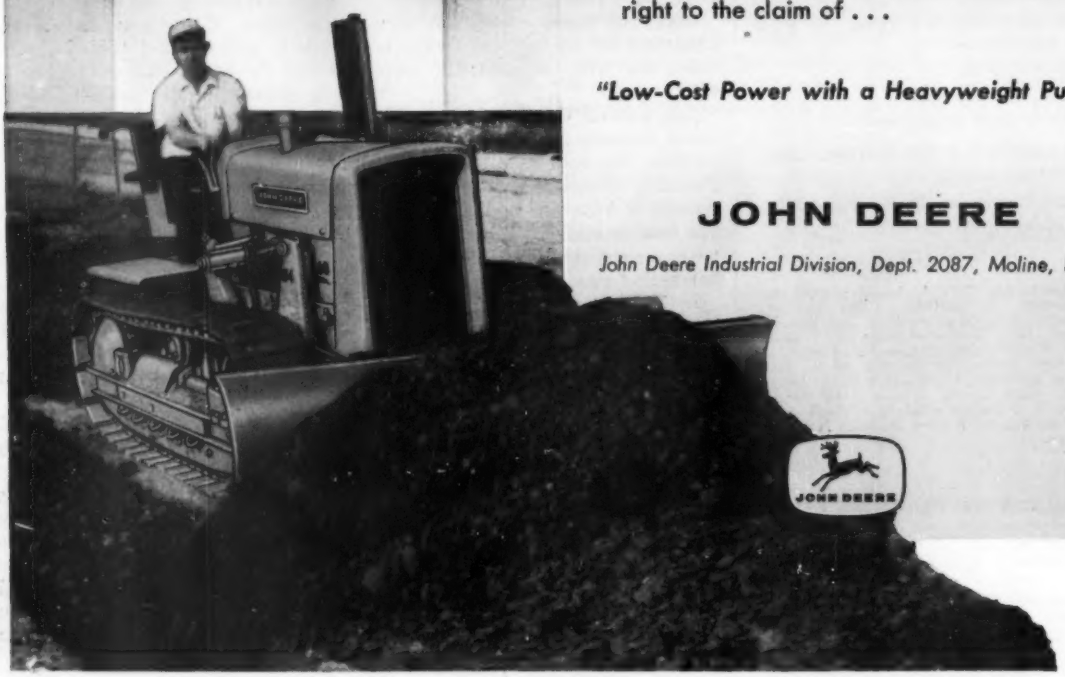


"The Greatest Year of My Life—"

Today, many are gradually "discovering" that the strength of this nation of free people rests in the vitality of its cities and its other urbanized areas. At the same time, too many of those who presume to appraise the role of the city in our society ignore or shrug off as of minor importance its water supply, its sewerage system, refuse collection and other sanitation programs, its streets and other traffic arteries, and pay lip service to its parks and recreational areas.

He who judges and does not take into account these vital services looks at America today with a blind eye. He fails to see the structure that holds these urban areas together and permits them and our nation to grow in power and responsibility.

There is a sewer in Seattle, a utilitarian sort of structure to most. It was built 50 years ago 100 feet below ground through a layer of quicksand. It collapsed a couple of years ago, creating a ragged, spectacular split down the center of the street. Seattle has been repairing this sewer, using remarkably resourceful engineering methods, chemically stabilizing the quicksand; threading in a new steel liner, protecting this liner inside and out with non-shrinking cement mortar.

One young engineer-inspector assigned to this difficult repair job said enthusiastically, "This has been the greatest year of my life!"

Professionally, he is unquestionably right. When this project is completed, he and others working on it will know as much as any engineer in the nation about stabilizing a quicksand soil chemically and about the proper blends of cement mortar that will allow the mortar to be placed in difficult areas without shrinking and causing leakage cracks.

Nevertheless, there are those who scoff at resourceful work like this. "What importance is there to a man grubbing in a sewer 100 feet below ground for a year?" they will ask.

Those who raise such a question, we say, miss the foundation stones that physically support a society of free people. They look, we repeat, with a blind eye.

At the opposite corner of our nation is the vigorous and spectacular city of Miami. In the 1920's, this city invited a professor of sanitary engineering, Charles Nichols, to assume the responsibility of city engineer during its period of growth when it was trying to decide whether to be another resort area or an important metropolitan center.

As the years went on, the potential of Miami began to crystalize, and in the late 1930's this ex-professor knew that his city would be crippled if it did not have a strong, well-engineered system of sewers. However, war clouds began to gather and not only skimmed off most of his engineering staff but also laid a prior claim to most consulting engineers.

Nevertheless the sewers had to be designed. He therefore decided to do the work himself, along with his other engineering duties. So in the ensuing months, this dedicated engineer spent his energies fashioning an intricate network of conduits that would flow as much as possible by gravity in the table-flat terrain of Miami. When the design was complete, the estimate prepared, and an appropriate bond issue ready for the vote, he went to the hospital, a sick, weakened man.

Fortunately the people of Miami saw the wisdom of their engineer's work and approved the bond issue by a comfortable margin. One of his assistants rushed down to the hospital to bring him the favorable election returns. The old gentleman raised himself on his sickbed, adjusted his glasses to read the results, and then said with professorial dignity, "Splendid indeed, most reassuring," and then slumped back, his voice stilled by death.

Some may be scornful of a system of sewers as a tribute to a man's devotion to duty. But with the help of these conduits, Miami has capitalized on its other potentials and today is a powerful metropolitan center.

There are many other examples. A water superintendent in Indiana became annoyed with his rather awkward test for a chlorine residual and curious about the way the reaction took place. Out of this came the Laux flash test that has brought benefits to water supplies all over the nation.

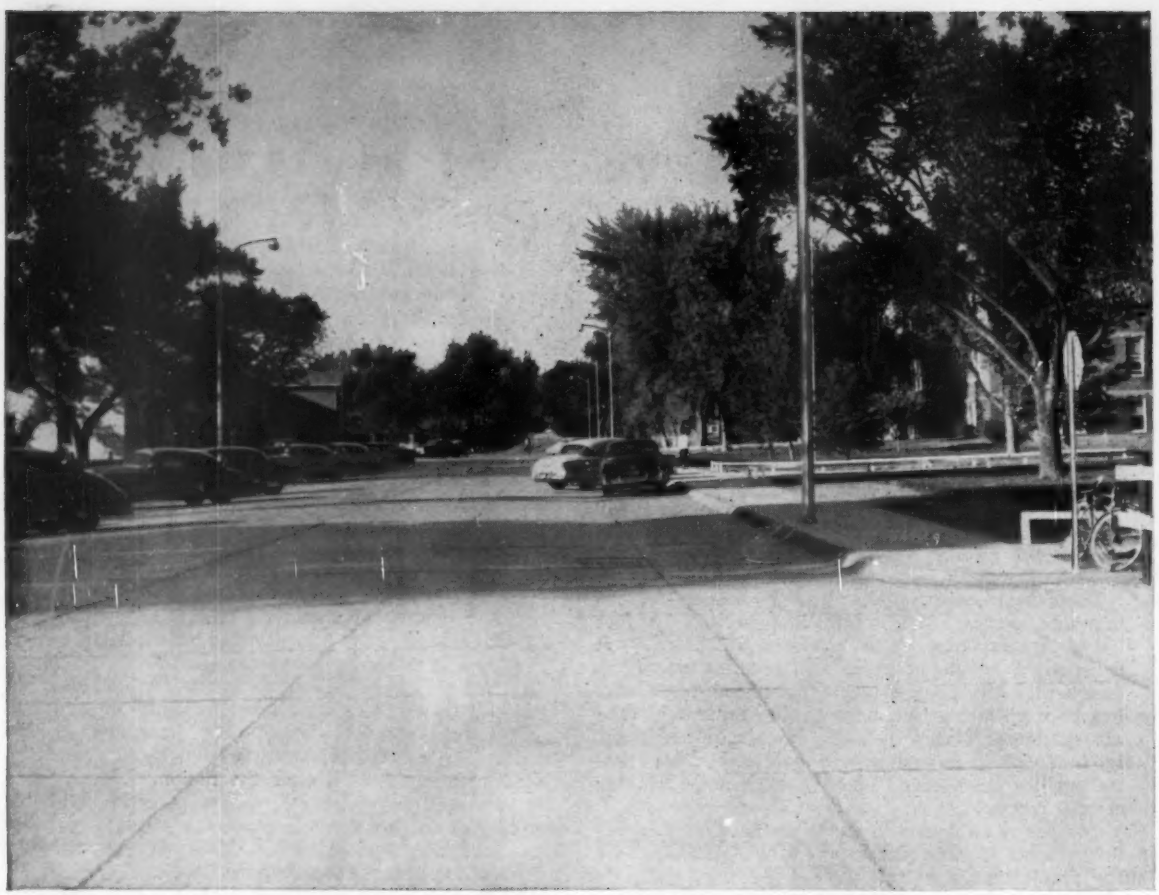
A young city engineer in Iowa, together with his professor of highway engineering, started experimenting with foamed asphalt. From this has come an improved resurfacing material.

A public works superintendent in Columbus, Ga., trying to do an efficient job of collecting leaves in the fall, decided to try picking them up with a cotton-gin blower. Today cities all over the nation have another tool to use in coping with this annual problem.

A city engineer in Southern California, trying to dispose of refuse, decided to use it for fill material, compacting it carefully and covering it with earth at the end of the day. As the result of his work, the cancerous municipal sore known as the open dump no longer has any justification for existence in most of the nation.

A young hydraulic engineer, one winter day, found that the bar screen leading from his city's water reservoir was becoming clogged with anchor ice. More in desperation than in judgement, he pulled the screen, and down the pipeline rushed a roaring mixture of ice and water. To his surprise, the pipeline's hydraulic capacity jumped measurably. The ice had scoured out flow-restricting tubercles; from this has developed our present practice of water main cleaning.

Everyone recognizes that an urban society is a vital one. At the same time, one must recognize those solid, hard-working services that give this society strength. We also must pay proper respect to those dedicated, unselfish men whose imagination and resourcefulness insure the purity of our water supplies and remove health hazards associated with bad sewerage and refuse sanitation, and who perform their many other tasks, often against great odds, to make our urban communities strong, within the government of free men.



Avenue G — one of Gothenburg's wide, modern concrete streets

No street maintenance needed in Gothenburg, Neb.

...all the streets are paved with concrete

Small cities as well as large find big advantages in concrete streets. Gothenburg, Nebraska, for one—with just 3,000 residents—has used nothing but concrete since 1929, now has 130 blocks of safe, attractive concrete streets.

City officials and homeowners alike are proud of these streets that have done wonders for the looks of the whole town. They like the safety of concrete, too. Its grainy surface provides dependable skid resistance. Add the high night visibility only a light-colored pavement gives.

But most important is the money Gothenburg saves by going concrete all the way. These concrete streets have received no maintenance at all! That means there is no expensive maintenance equipment for the city to own and operate.

In Gothenburg, these savings every year go right back into more modern, attractive concrete streets!

Municipal officials everywhere are finding the same satisfaction in watching their concrete street programs grow—in mileage, in popularity and in savings to the community. If you want to know more about concrete streets, or how PCA can help you with your street paving program, write for free information.

PORTLAND CEMENT ASSOCIATION

Dept. A11-4, 33 West Grand Ave., Chicago 10, Illinois

A national organization to improve and extend the uses of concrete

MODERN Concrete

A prime coat of MC-1 cutback asphalt was applied prior to both seal coating and application of the hot plant-mix asphaltic concrete.

Heavily traveled streets received a machine-lay surface of asphaltic concrete placed over a five-inch crushed-rock base.

Marysville, Kan. Updates Its Streets

. . . by using two types of surface preparation to meet differing traffic and economic demands

By **T. W. CRAIG***

Both steel and rubber-tired rollers were used to compact machine-laid surface material.

For a city of only 4,100 inhabitants, the completion of 110 blocks of street surfacing and resurfacing in two years constitutes an ambitious undertaking. Under the guidance of a civic-minded administration that realized and acknowledged the need, Marysville completed a program that has done much to reinforce public confidence in its local government.

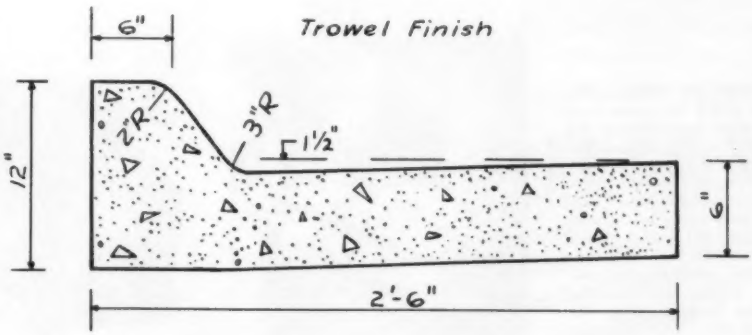
The surfacing consists of two types: penetration and double seal; and a two-inch hot plant-mix asphaltic concrete over a five-inch crushed-rock base. The former we used on streets carrying light traffic while the latter was utilized on more heavily traveled streets and where property owners requested a better construction.

With the exception of eight blocks, all of the streets surfaced or resurfaced in the past two years have concrete curbs and gutters, built ten years ago. The same contractor who handled the surfacing program constructed curb and gutter on the eight blocks just prior to placing the new surface material. The sketch shows a cross section of our standard curb and gutter.

Procedure

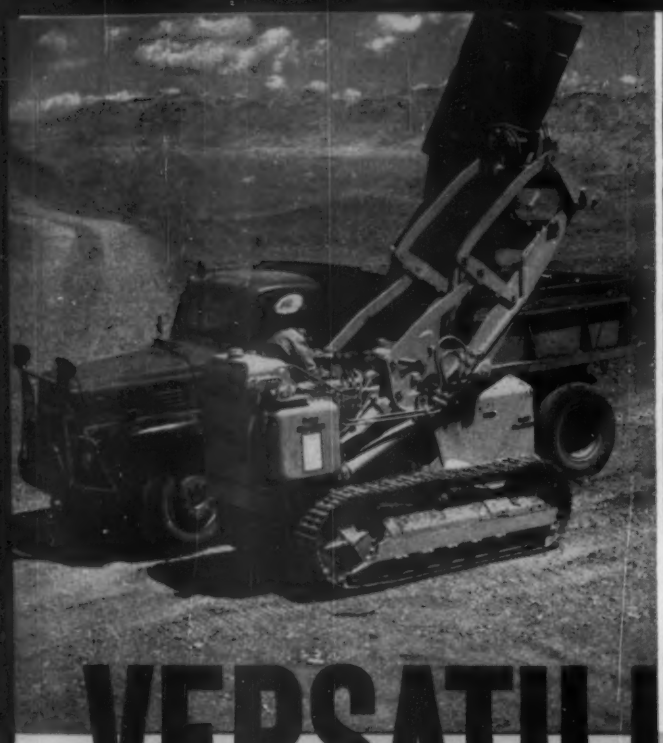
On the penetration and double-seal work, the base consisted of specified glacial gravel and binder material, with a P. I. (plastic index)

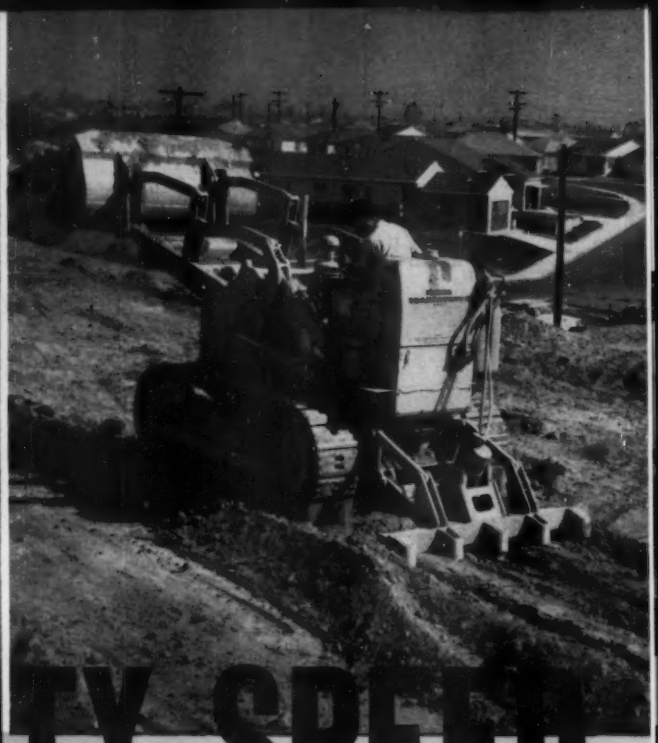
(Continued on page 204)



Cross section of curb and gutter.

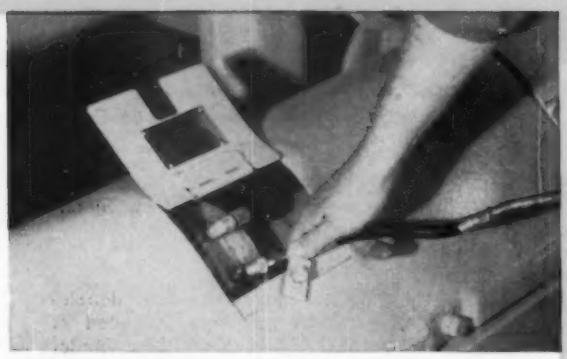
* Mr. Craig is the City Engineer of Marysville, Kan.



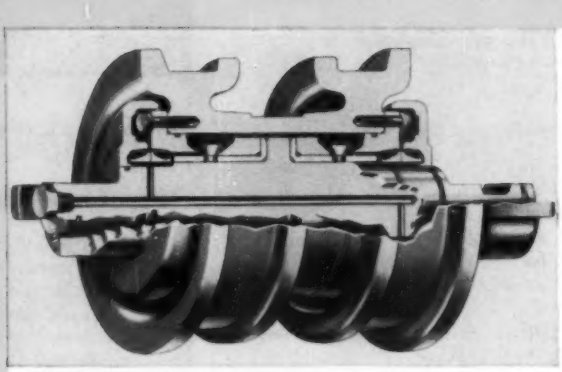


VERSATILITY SPEED

ADD UP TO TOP PRODUCTION

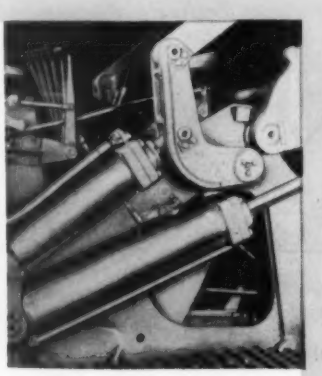


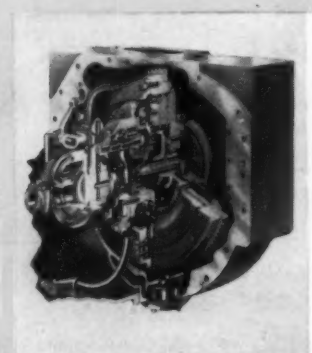
HYDRAULIC TRACK ADJUSTERS standard on the No. 977 and No. 955 —optional on the No. 933. An ordinary grease gun is all that's needed to adjust tracks. Just open the inspection door and apply a few strokes. The hydraulic cylinder does the rest.



LIFETIME LUBRICATED ROLLERS. They need no lubrication servicing until rebuilding. Heat-dissipating oil lubricant is retained by dirtproof floating-ring seal. Eliminate on-the-job roller lubrication. Keep machines on-the-go for longer periods of time.

SMOOTH-FLOW BUCKET CONTROL LEVER. The inside lever is pulled back, lifting the load. It locks in this position until it is kicked out at maximum height by the lift cylinder and linkage. After dumping, both levers are pushed forward. The bucket lowers but only tilts back to an adjustable, preset digging position. Linkage then kicks the outside lever, stopping the bucket tilt.





EXCLUSIVE CATERPILLAR OIL CLUTCH . . . the most advanced clutch design ever offered. Provides up to 2,000 hours without adjustment. This is equal to about 12 months of "adjustment-free" operation. And because wear rate of clutch facing is so slight, down time for clutch repair is almost eliminated.

DEPENDABILITY

IN A TRAXCAVATOR

WHATEVER THE JOB . . . whatever the conditions . . . there's a Caterpillar-built Traxcavator to take charge. Advance design has given this machine a reputation for speed . . . efficiency . . . low operating and maintenance costs. For this is a digging and loading tool; not a tractor attachment.

The line is complete. You get top production from three Traxcavators . . . the No. 933—52 HP, 1⅛ cu. yd. bucket; the No. 955—70 HP, 1½ cu. yd. bucket; the No. 977—100 HP, 2¼ cu. yd. bucket. And there's a complete range of quick-change attachments . . . special buckets, bulldozers, forks, the exclusive side dump bucket and the rear-mounted ripper.

Traxcavators are built to last. They have a heavy steel main frame, welded into a one-piece unit. Box construction track roller frame absorbs the loads and stresses of tough treatment. Lift arms are made to stand up under the strain of heaviest digging conditions.

Traxcavators give you fast action and ease of operation. Excellent stability and balance give better control of the machine. A fast hydraulic system cuts cycle time and increases maneuverability even in close quarters. Visibility is excellent. The high seat puts the operator on "top" of the work. Operator's compartment is uncluttered. Tractor controls are conveniently located for handling ease. Bucket controls are at the right armrest . . . closely spaced for dual operation with one hand.

The reliable Caterpillar Diesel Engine has a fuel-saving injection system and ability for hard lugging. Each engine is matched to the machine for power and bucket size.

All of these features pay off in top production. Let your Caterpillar Dealer help you choose the Traxcavator best suited for your job. Get production facts and figures. And ask for a demonstration.

Caterpillar Tractor Co., Peoria, Illinois, U.S.A.

CATERPILLAR

Caterpillar, Cat and Traxcavator are Registered Trademarks of Caterpillar Tractor Co.

BOOST PRODUCTION AND LOWER COSTS WITH A VERSATILE TRAXCAVATOR

A NEW WAY TO

Economical Efficient Flexible Power

USING GENERAL ELECTRIC TURBINES

Crisp County Power Commission Utilizes Gas-Turbine Exhaust To Supply Heat and Combustion Air to Steam-Turbine Boiler

A combined General Electric gas turbine-steam turbine generator plant provides a highly efficient, flexible and economical source of electric power for the Crisp County Power Commission, Cordele, Georgia.

High Efficiency is obtained by using oxygen-rich exhaust from the gas turbine to supply combustion air and approximately one-third of the full-load heat requirements of the steam-turbine boiler.

Flexibility, with output ranging from 5000 to 17,500 kw, is provided by operating the two turbines separately or together. Additional feedwater heaters enable the steam turbine to be operated when the gas turbine is shut down.

Economy of this combination is realized through both low investment and low operating costs. The over-all initial cost of the gas turbine-steam turbine plant at Crisp County is lower than that of a comparable steam plant with the same rating and efficiency. Only two men per shift are required to operate and maintain this compact installation.

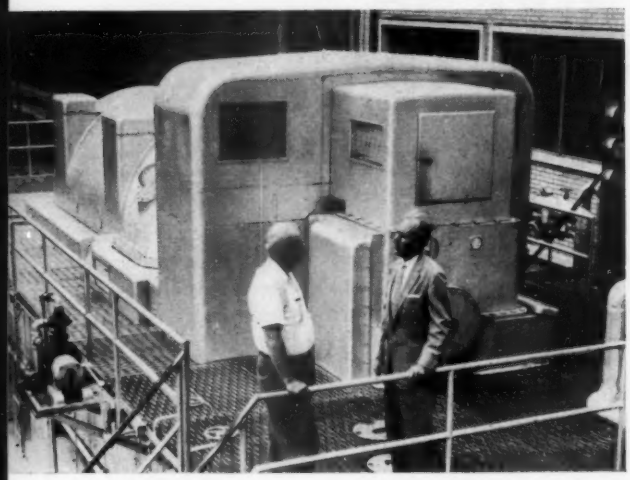
General Electric has a wide selection of turbines designed to meet your requirements. Our application engineers will help you analyze your needs, and provide assistance during installation.

Ask your General Electric Sales Engineer for more information, or write to Section 271-5, General Electric Company, Schenectady 5, N. Y.

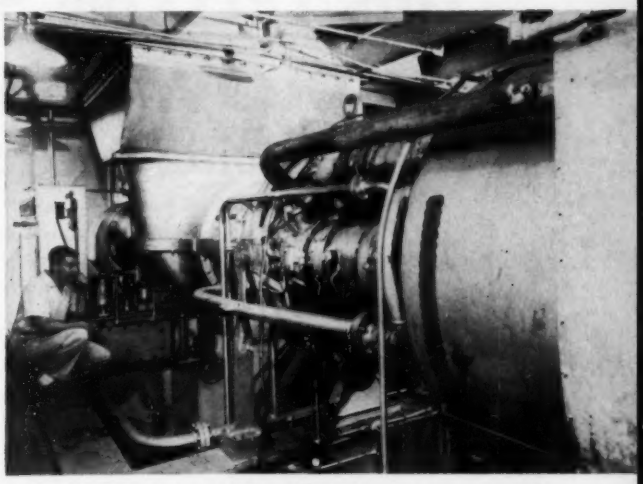
Progress Is Our Most Important Product

GENERAL ELECTRIC

CRISP COUNTY POWER COMMISSION PLANT, Cordele, Georgia, uses coal and natural gas to provide economical and efficient operation of General Electric gas turbine-steam turbine combination.

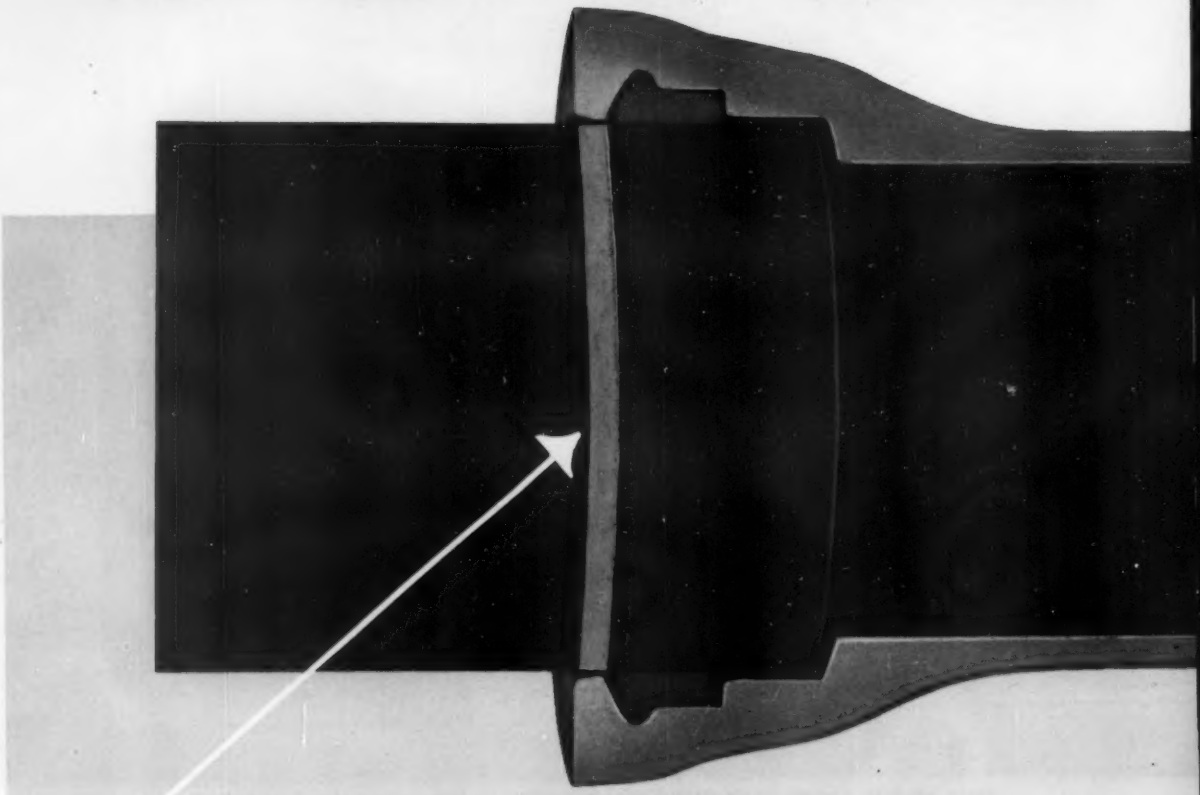


STEAM TURBINE at Crisp County plant is rated 12,500 kw. W. Dan Sinclair, left, manager of the Crisp County Power Commission, conceived the design for this unique plant. A. B. Morrison, G-E Sales Engineer, is at right.



SIMPLE-CYCLE GAS TURBINE at Crisp County plant not only generates 5000 kw of power, but also furnishes combustion air and approximately one-third of the full-load heat requirements for the steam-turbine boiler.

CLOW



This YELLOW STRIPE on

CLOW Bell-Tite Joint Pipe

is your guide line to a quick bottle-tight seal

This circular yellow stripe is painted on the plain end of each length of CLOW Bell-Tite Joint pipe. It serves as a guide in making up the joint, to provide a fast, positive visual check that the the joint is completely and correctly assembled.

The edge of the stripe farthest from the plain end measures approximately one-half inch less than the depth of the Bell-Tite bell. Thus, in assembly, the joint is made pressure-tight when the stripe is no longer visible.

The seal is achieved by the use of a single, thick-section, high durometer molded rubber gasket. When compressed in position by the entering plain end of pipe, it forms a pressure-tight seal with generous sealing area which permits ample deflection to meet casual curves or grades.

CAST IRON

with patented* Bell-Tite Joint

*Patent No. 2898131

MORE MAIN FOR YOUR MONEY

Costs less to buy

Only one accessory is required to make a pressure-tight seal with a CLOW Bell-Tite Joint —a single, molded rubber gasket. There are no extras—no bolts, no nuts, no followers, no couplings. This economical pipe is strong, tough, uniform and durable for long-life underground service. It is available in any specified thickness or weight class in accordance with ASA, AWWA, or Federal specifications from 3″ to 24″.

Costs less to install

Assembly is quick, simple and easy. Pressure-tight joint is formed instantly by merely inserting the rubber gasket and pushing the pipe home to its seat. It can be installed in a wet trench and even under water. Rate of installation usually is limited only by speed of excavation. It permits ample deflection for casual curves or grades. Bell-Tite Joint pipe is Underwriters' Listed for working pressures up to 350 psi. Available in diameters up to 24″.

CLOW CAST IRON PIPE

JAMES B. CLOW & SONS, INC.

201-299 North Talman Avenue, Chicago 80, Illinois

Subsidiaries:

Eddy Valve Company
Waterford, N.Y.

Iowa Valve Company
Oskaloosa, Iowa

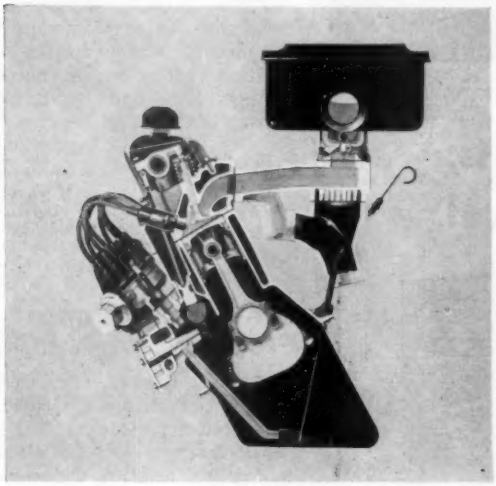
ANNOUNCING 3 SOLID PLYMOUTH '60 POLICE CARS —PATROLLER 6, PATROLLER SPECIAL 8, PURSUIT SPECIAL 8. THEY'RE BUILT A NEW WAY WITH DURA-QUIET UNIBODY CONSTRUCTION THAT ADDS THOUSANDS OF MILES OF LIFE EXPECTANCY. OTHER NEW ADVANCES INCLUDE THE TOUGHER, MORE DURABLE 3-SPEED MANUAL TRANSMISSION AND THE FAST, LONGER-LASTING, TOTAL-CONTACT BRAKES.

Solid new Dura-Quiet Unibody.

Every Plymouth is built a new way with a new kind of unit construction called Dura-Quiet Unibody. About 5400 precise welds join sturdy steel of body and frame into one, strong, solid, welded unit. This kind of unit construction gives more pure strength per pound of steel, more inside room, where room is needed, and tens of thousands of extra, rugged, quiet miles. Seven different preparatory and protective baths and six special chemical sprays cut body corrosion and maintenance 'way down.

New engines for every need.

New inclined 30-D Economy Six Engine —145 horsepower at 4000 RPM—is ideal for city police. Delivering top gas economy,



it rivals sixes with 30 to 70 less horsepower. It is the best performing six in its class and is standard in the Patroller 6. It uses regular gas. *New Fury V-800*—Big, rugged, it develops 230 horsepower at 4400 RPM. A powerful V-8 for both city and suburban use and can hold its own on the highways. Standard in the Patroller Special 8 model. *Golden Commando 395 V-8*—This brute develops more torque per cubic inch than any other standard engine used for police work. It's built for the Pursuit Special 8, made for highway and turnpike patrol.

New rugged transmissions and brakes.

Heavy-duty Synchro-Silent manual 3-speed transmission standard on Patroller 6, Patroller Special 8. Extra cost push-button automatic transmissions: 3-speed New TorqueFlite-6 on Patroller 6. 3-speed TorqueFlite and 2-speed PowerFlite on Patroller Special 8. 3-speed TorqueFlite is standard on Pursuit Special 8. Rugged T-85 manual transmission may be ordered special for the Pursuit Special 8.

New Total-Contact Brakes with three-platform staging—Big, heavy-duty 12" brakes have 251-square-inch lining area. Linings are bonded, not riveted to shoe. This helps eliminate drum scoring damage, also means longer lining life. Specially built platforms assure extremely accurate alignment and help eliminate brake noise.

New models.

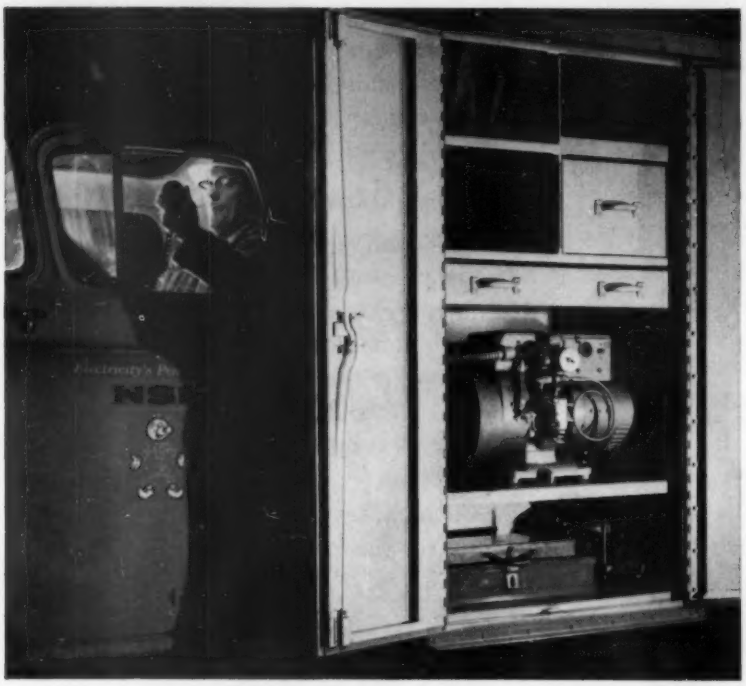
Plymouth offers three Solid Plymouth Police Cars with special high-performance equipment for '60. The Patroller 6, the Patroller 8 and the Pursuit Special 8. Plymouth also offers Emergency Police Wagons—roomiest in the low-price field.

Before you make any new commitments for Police Cars, we urge you to learn the details of the new line of Solid Plymouth '60 Police Cars. Ask your nearest Plymouth dealer for the new Plymouth Police Car Catalog, or talk with him at your earliest convenience. There's no obligation at all.

A Chrysler-engineered product

SOLID PLYMOUTH 1960

Onan NEWS REPORT



Built-in dual-purpose electric plant

delivers 2KW for tools and lights; keeps batteries fully charged, too!

Utility construction and maintenance trucks like this one, use two kinds of auxiliary electric power . . . and the Onan Electric Plant provides both. Workmen can plug in on the plant for 2,000 watts of 115-volt, 60-cycle A.C. to operate electric tools like drills, saws, soldering irons and floodlights. Or the plant will deliver 30 amperes of 12-volt D.C. to handle the battery drain of 2-way radio and battery-powered lights.

The Onan's D.C. output makes it unnecessary to run the truck engine to keep batteries charged, making savings in fuel and engine maintenance totaling hundreds of dollars per year per truck.

Leading body builders now install these dual-purpose Onan plants on new vehicles or you can mount them on vehicles now in service. Onan's Vacu-Flo cooling system permits installation within a closed compartment. Where no space is available in the truck body, the plant can be neatly installed over the cab within a handsome weatherproof steel housing.

Dual-purpose utility models are available with either 1,000 or 2,000 watts A.C. Powered by smooth-running single-cylinder Onan air-cooled gasoline engine.

ONAN INSTAPAC

Instantaneous standby power for microwave systems. No interruption of any kind of signal. No moving parts. Can be fitted to existing standby installations.

Call the Onan distributor listed in your phone book or write for specifications.

D. W. ONAN & SONS INC.

ELECTRIC PLANTS GENERATORS ENGINES ENGINE-COMPRESSORS

2551 University Avenue S.E. • Minneapolis 14, Minnesota

Onan ELECTRIC PLANTS

(Continued from page 5)

when government will be entirely superseded in the realm of providing recreation. Instead municipalities will limit their activities to matters of regulation. Already many municipalities are considering changes in their zoning and building codes and other legislation along these lines.

However, let us not jump to the too hasty conclusion that private recreation is going to solve the immediate park problem of every municipality. Planners must still be prepared to assist harassed municipalities in finding a solution to the recreation problems of today, tailor made to the needs of the community.

MYRON X. FELD, P.E.
Feld-Sussna Associates
Planning and Zoning Consultants
Trenton, N. J.

For Engineering Students

May we please have 500 reprints of the March 1959 article "Chicago's Water Works of Tomorrow" (p. 91) delivered here by October 14? I hope you can accommodate us in this matter. We are having several hundred visiting senior engineering students here and we think THE AMERICAN CITY will impress them.

SHERWOOD ROSS
Dept. of Water and Sewers
Chicago, Ill.

EDITOR'S NOTE: Delivery made on time. We hope that the reprints helped these young engineers understand this important project.

Brewer of Atlanta President of N.I.G.P.

Ernest J. Brewer, City Purchasing Agent of Atlanta, Ga. since 1950, was elected president of the National Institute of Governmental Purchasing at the October 1959 Convention in Cleveland, Ohio.

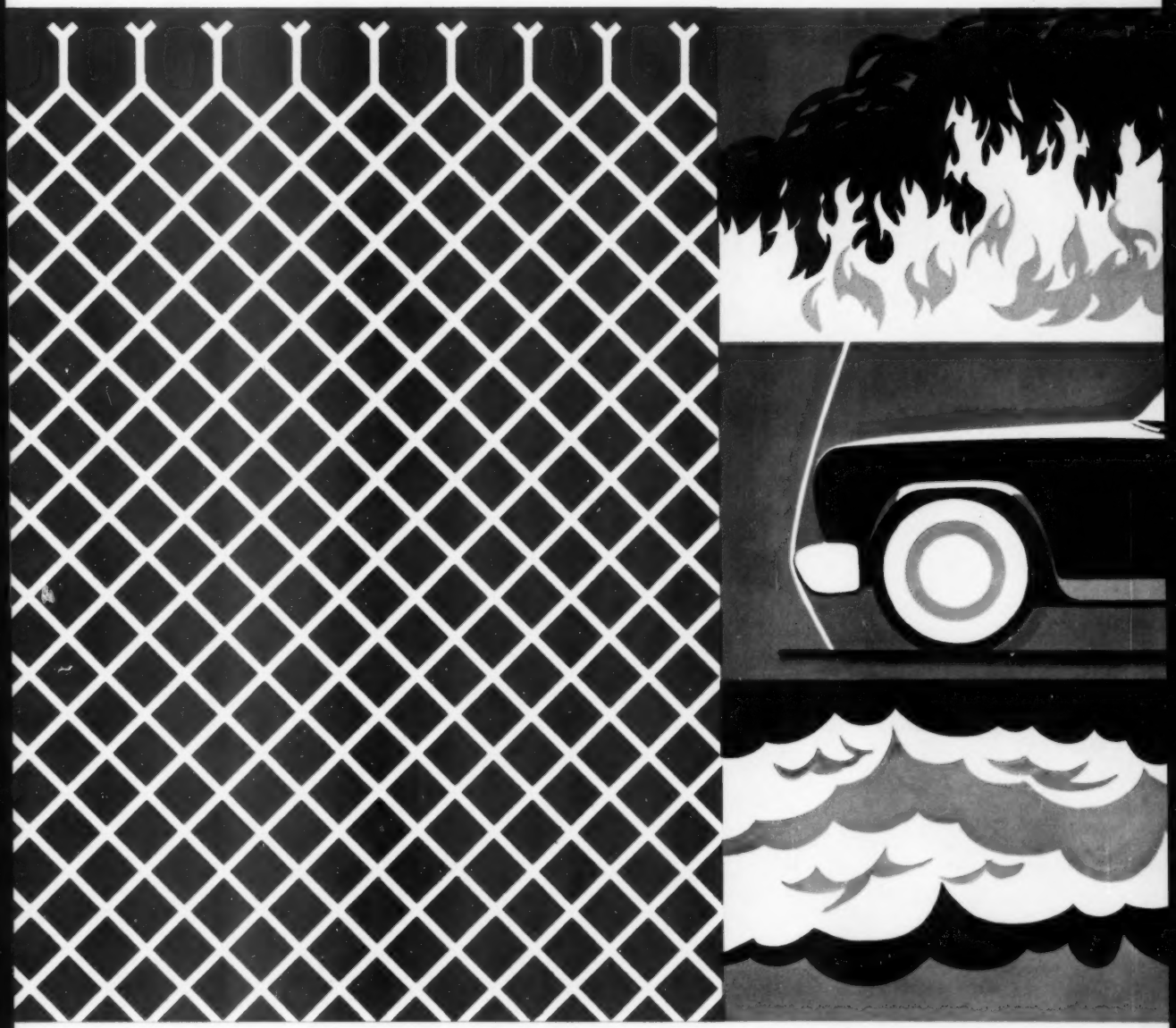
The Institute is a non-profit educational and technical organization of governmental buying agencies of the United States, Alaska, Canada and Puerto Rico, dedicated to improving governmental buying, with offices in Washington, D.C .

The Atlanta Purchasing Department, headed by Mr. Brewer, has gained national recognition for its strict sealed bid practices and progressive methods of procurement, and every investigating Grand Jury since 1950 has commended its honest, fair and efficient operation. He has written a number of articles for THE AMERICAN CITY.

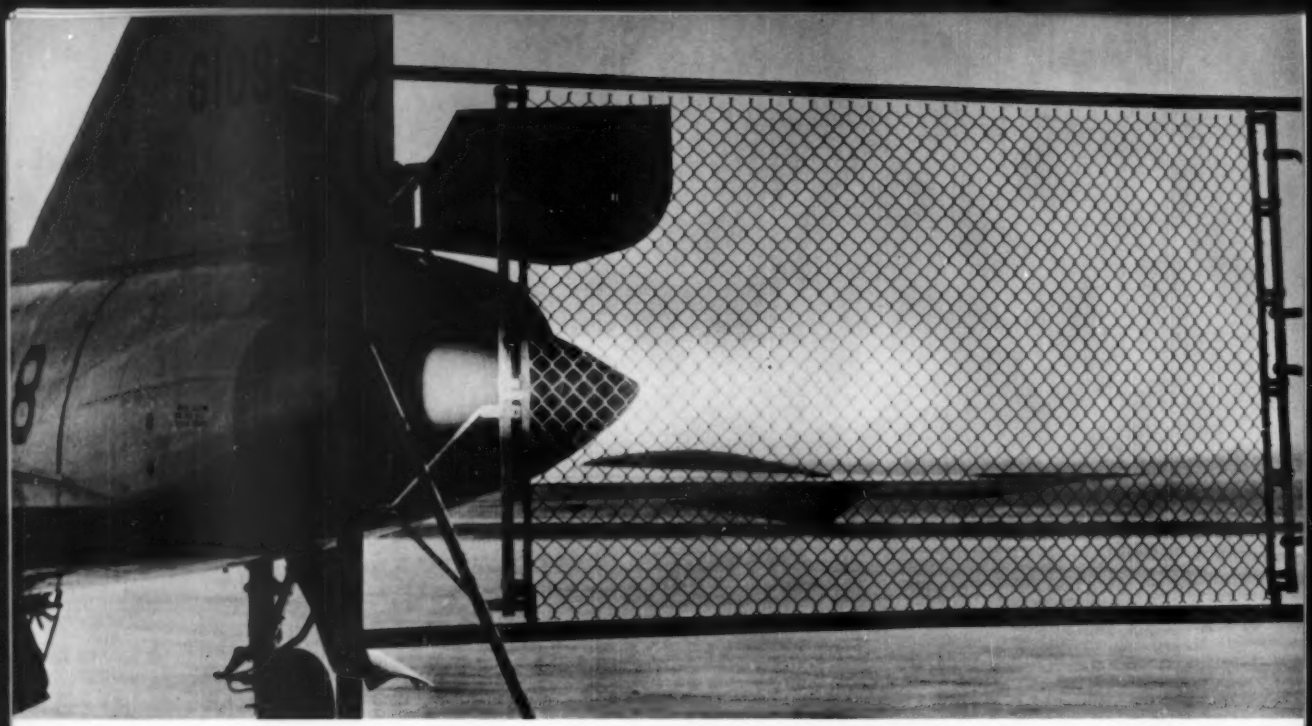
How to give your property lasting fence protection

There are many Cyclone Fences now standing that are 30, 40 or even 50 years old. They control traffic daily at industrial plants, municipal projects, schools, warehouses and parks.

USS Cyclone Steel Fence can give this type of protection because it's built to last. The woven chain link fabric is heavily galvanized after weaving to resist corrosion. The posts are rugged. They won't heave with frost or fall with shock or impact. And the gates are balanced to open and close countless times without dragging.



For more proof of Cyclone's excellence, see what happened when special panels were subjected to gruelling tests.



Cyclone withstands the furious heat from a jet fighter plane

4 tests that show why USS Cyclone

Different situations . . . different tests . . . with the same result every time. Cyclone Steel Chain Link Fence can take punishment and come back for more. Fire and heat couldn't melt that heavily galvanized steel fabric. Highly corrosive salt atmosphere could not cause destruction, not in 10 years' time. Not even the

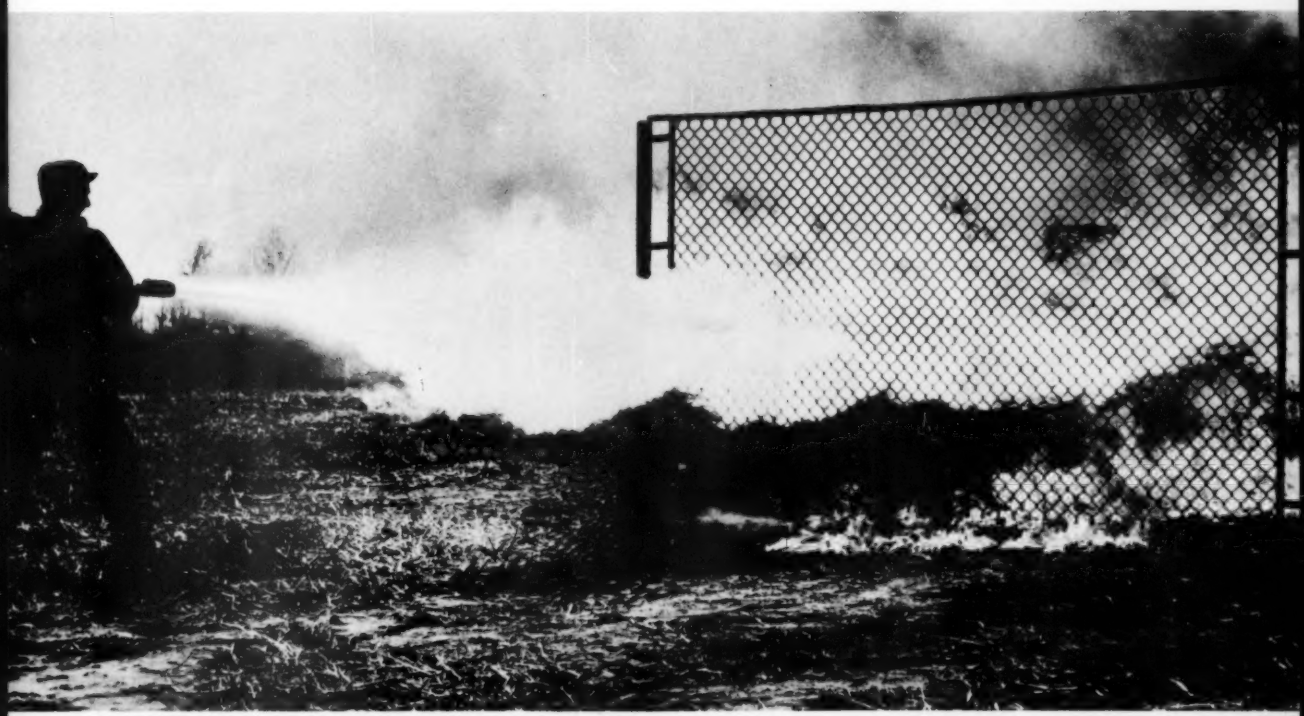
. . . the shattering impact from a speeding 4000-pound car

. . . ten years' exposure to corrosive salt atmosphere

Steel Fence is your best buy

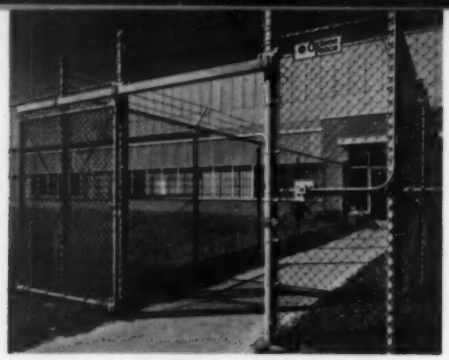
powerful force of that hurtling car damaged the Cyclone Fence beyond usefulness.

Isn't this proof that USS Cyclone Fence would be the best investment to protect your plant, school or other property?

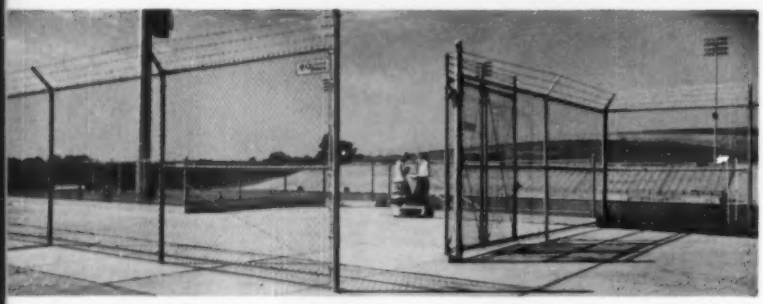


. . . scourging fire from a military flame thrower

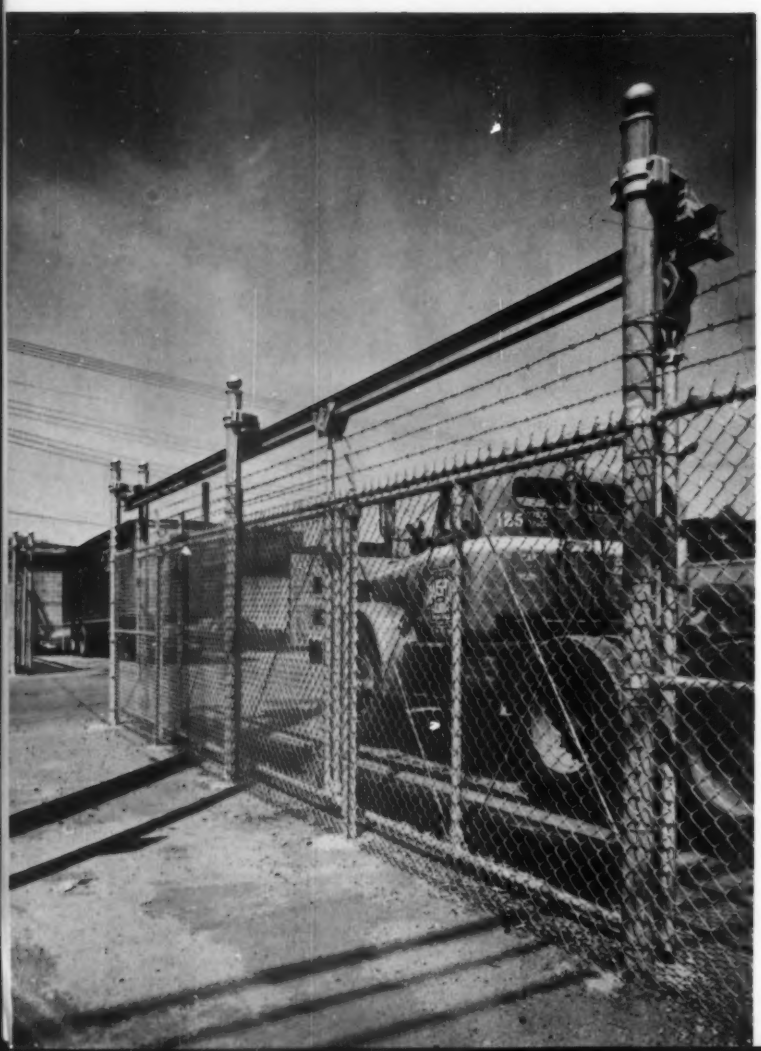
Here's how others use the protection of Cyclone Fence



Where maximum security installations are required, such as around an atomic energy plant, special gates and electrical operating equipment can be provided to control traffic.



Cyclone Fence controls admission to athletic events and keeps out uninvited guests. It makes a safe playground for small children, protects them from the dangers of traffic and wanderlust.



Huge trucks roar in and out of this warehouse every day, and sometimes they sideswipe the fence. Yet, after long, hard service the fence is still in good condition.

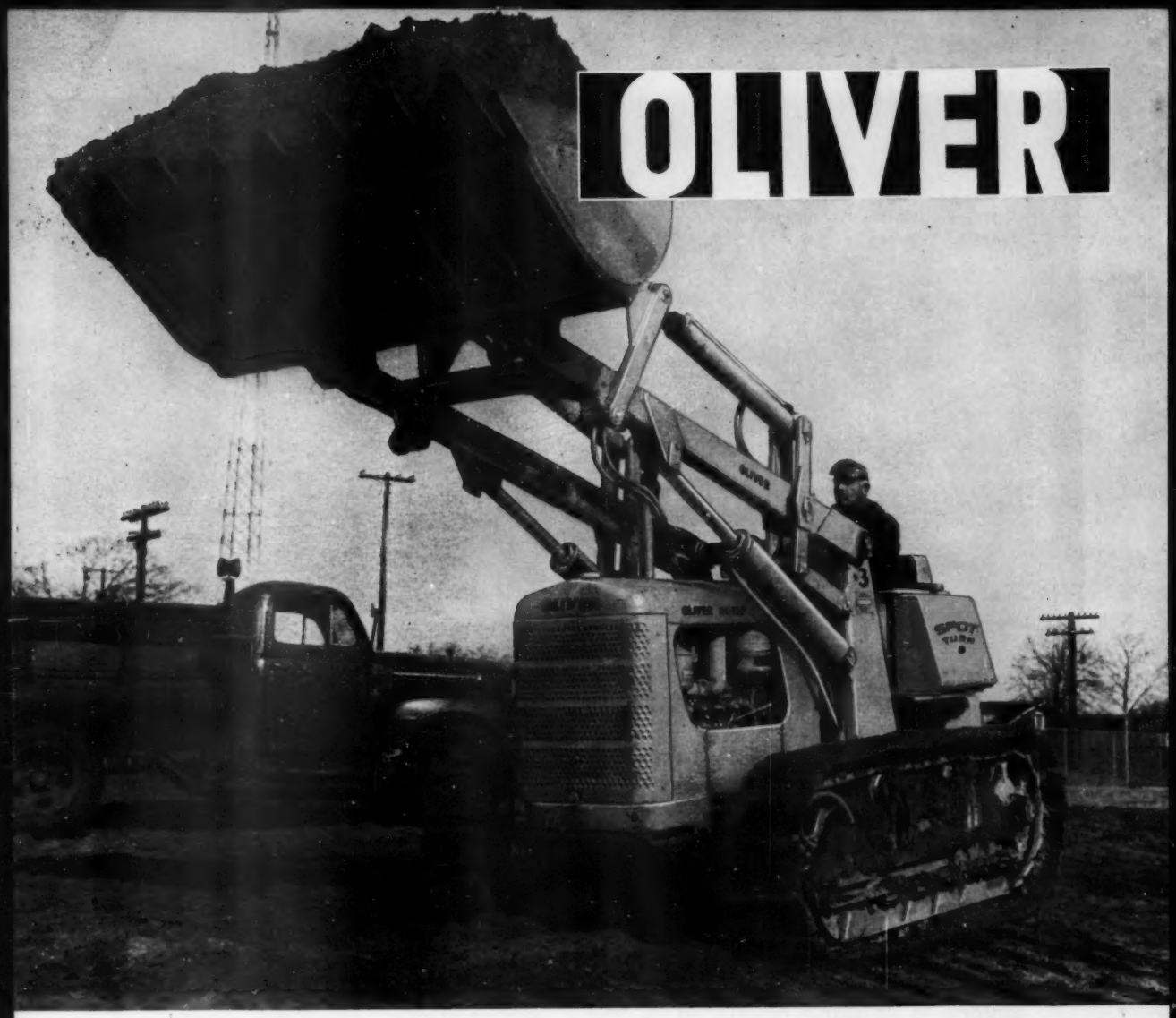
whatever your fencing needs, USS Cyclone can supply them

Cyclone is the world's largest manufacturer of property protection fence. It has been the leader in producing quality chain link fence and in establishing proper specifications. Cyclone Fence is backed by all the research and engineering facilities of U S Steel. Remember this when you specify property protection fence. For more information, write to Cyclone Fence Dept., American Steel & Wire, 614 Superior Ave., N.W., Cleveland 13, Ohio.

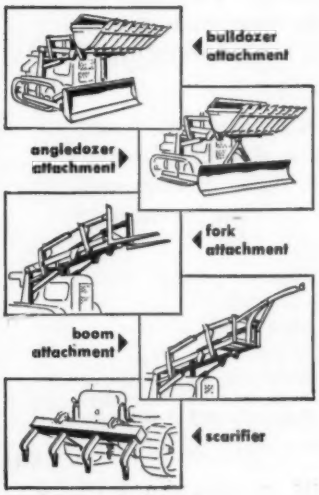
USS and Cyclone are registered trademarks

Cyclone Fence Dept.
American Steel & Wire
Division of
United States Steel

Waukegan, Illinois Sales Offices Coast to Coast



BUY THE LOADER THAT DOES MORE FOR YOU–OLIVER OC-126



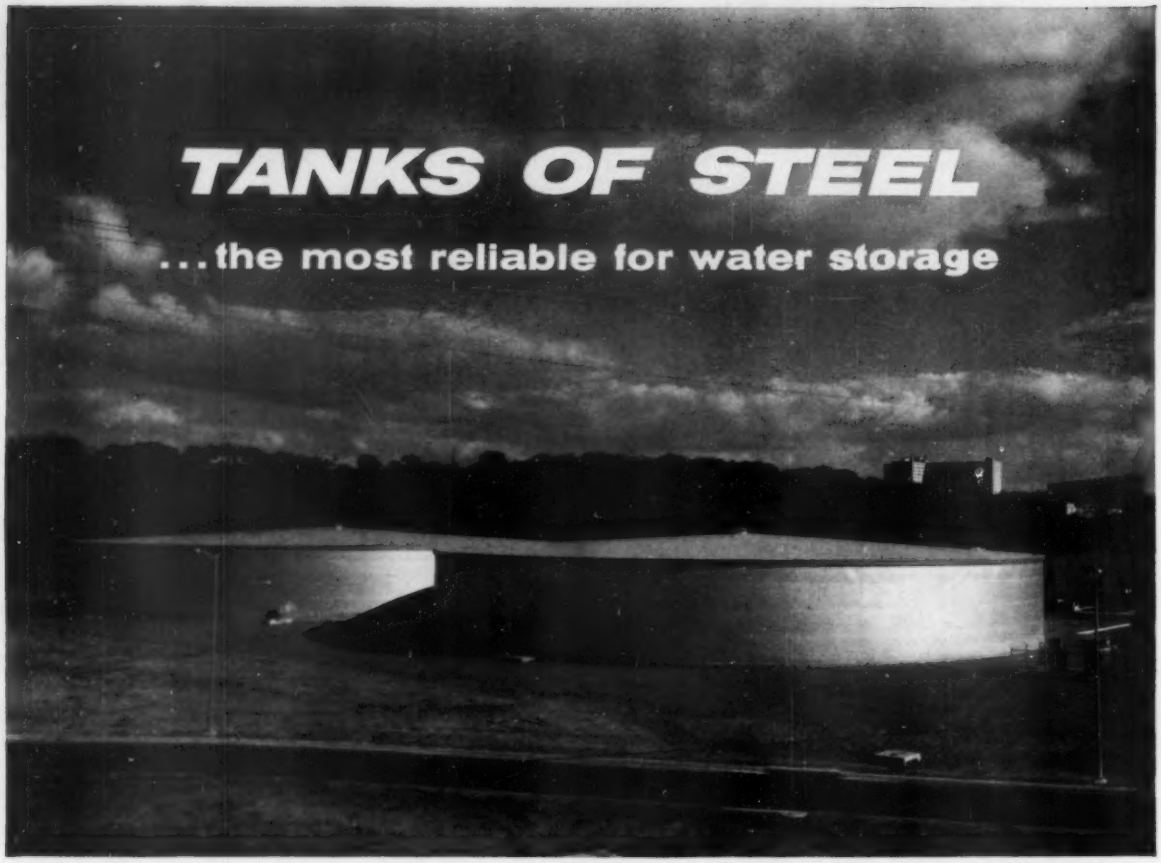
...one work-test will prove it

Let your Oliver distributor demonstrate this versatile materials handler that can do more for you than any other machine—the Oliver OC-126 loader. Besides performing the usual loading, stockpiling and excavating jobs with the standard 1½-yd. bucket, the OC-126 mounts many other quick-change attachments to handle a variety of municipal assignments.

Now with "Spot-Turn" clutch steering, the OC-126 adds further to its usefulness with safe, locked-track pivot turns that permit cramped-area operations, faster work cycles. With four forward and two reverse you get the right speed for every job, too. And there is plenty of power when you need it in the 60 h.p., gas or diesel, high-torque engines.

Add to this a selection of 1¼-yd. rock or 2½-yd. snow buckets, bucket clearance of over 10′, 44° bucket roll-back, and 3′ digging depth, and you have the most useful municipal materials handler you can own. Ask your Oliver distributor to prove it to you on one of *your* jobs today.

THE OLIVER CORPORATION
Industrial Division, 19300 Euclid Ave., Cleveland 17, Ohio
a complete line of industrial wheel and crawler tractors and matched allied equipment



These 6,000,000 gallon CB&I-built steel reservoirs serve the City of Fort Worth, Texas

All CB&I-built reservoirs, standpipes and elevated tanks for municipal water storage conform to standards established by The American Water Works Association . . . the nation's foremost authority on water storage structures. Only steel tanks provide the protective assurances set forth in AWWA standards. A bottle-tight CB&I-built steel tank or reservoir will benefit your community because:

- *CB&I Tanks save you the cost* of expensive special interior coatings or sealing compounds often needed to stop or prevent leaks in other-than-steel tanks.
- *CB&I Tanks give you the peace of mind* which comes with a performance guarantee. Few contractors will provide such a guarantee . . . unless steel is used.
- *CB&I Tanks give you the tangible economy* of trouble-free service life . . . which steel tanks historically provide.
- *CB&I Tanks give you the protection of AWWA standards* for maximum safety . . . unobtainable with any material other than steel.

These protective assurances are yours with the purchase of a durable, bottle-tight CB&I steel tank. Think it over and we believe you'll agree . . . *Your community is safer with steel.*

CHICAGO BRIDGE & IRON COMPANY

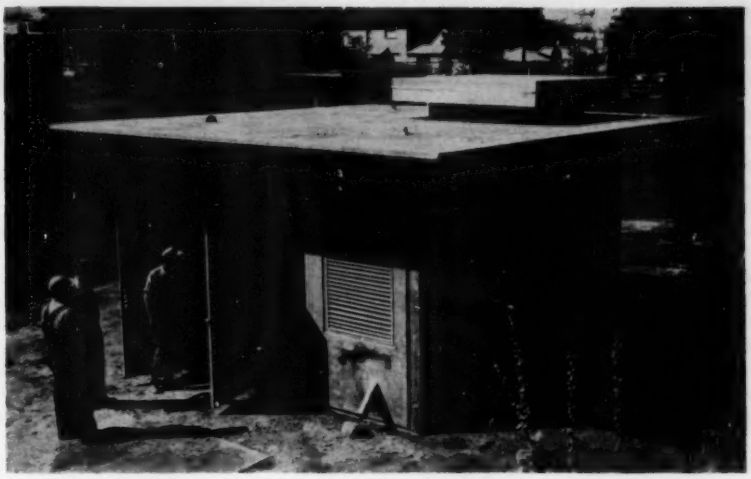
CBI

332 SOUTH MICHIGAN AVENUE
CHICAGO 4, ILLINOIS

OFFICES AND SUBSIDIARIES IN PRINCIPAL CITIES THROUGHOUT THE WORLD

Write today for your copy of the bulletin describing Steel Reservoirs and Standpipes.

M-61



City forces built this prefabricated reinforced concrete structure to house Pendleton's newest well pump and controls.

Pendleton Prefabricates a Pump House

A new well in Stillman Park, Pendleton, Ore. assures the city of ample water to serve an estimated population of over 20,000 by 1980. This new supply supplements our gravity system from Thornhollow and four other wells to provide a maximum of 16 mgd.

The 700-foot well ranges in diameter from 20 to 30 inches. Layne and Bowler Pump Co. of Los Angeles supplied the 2400-gpm pump and controls. Remote controls for automatic starting of all five city wells are located at the water department's shop.

City construction forces utilized a new type of shelter to house the pumping station. Concrete flooring was poured in place at the well site while the four walls and roof were poured in the municipal garage as separate reinforced-concrete slabs. These sections were then trucked to the site, hoisted in place by two lift cranes, and bolted together. The shelter will be painted next spring after the wax finish, which helps the concrete to cure fully, has dissolved.

City forces also installed all pipe and fittings, set the electrical-control equipment, and placed all wiring. A 10-inch main connects the new well with the distribution system. The cost of the entire addition came to about $85,000.

This fifth well adds another 3½ mgd to the existing supply. At present Pendleton has a population of 15,988 persons. Summertime demand reaches a peak of over 10 mgd.

The consulting engineering firm of Cornell, Howland, Hayes and Merryfield of Corvallis, Ore., worked closely with Water Superintendent Ray Struthers in the design and planning of the installation.

ANDREW J. BROWNING
City Manager, Pendleton, Ore.

Pennsylvania Builds Water Security

Pennsylvania communities are not sitting back under the tremendous burden of increasing demands for water, according to the state's Governor David L. Lawrence. They are meeting the challenge head-on.

Municipalities have installed one new water supply system every month during a state-wide building program that began over a year and a half ago.

"Adequate supplies of pure water are basic in the development of our communities," the Governor said "These systems must be sufficient for today's needs as well as for the needs we anticipate 50 years from now.

"Modern sanitary procedures and the wide use of filtration and chlorination systems to destroy bacteria in waters, along with the enforcement of high minimum standards, have helped to eliminate typhoid fever, dysentery and other water-borne diseases. Today, epidemics from poorly treated water are virtually unheard of in Pennsylvania."

Dr. Charles L. Wilbar, state health secretary and chairman of the state's Sanitary Water Board discloses that more than 9,000,000 Pennsylvanians now depend on public water supplies. He said that they are served by 1,075 systems ranging from smaller ones that serve as few as 100 persons to the 2,000,000 customers who are served by the Philadelphia water system.

Trend Toward Chlorination

Of the 1,075 approved waterworks, 247 have filtration, 589 provide chlorination and 239 supply untreated water to users. Those without treatment are generally located in the more remote areas of the state. Dr. Wilbar said that the trend is toward chlorination of all public water supplies.

Those communities that take water from surface streams must provide treatment facilities (clarification, filtration, chlorination, softening and in some cases, chemical control of tastes, odors, excessive alkalinity and acidity.)

City-County Commission Solves Problems

The experience of the Onondaga Public Works Commission, Onondaga County, N. Y. since 1933 provides convincing evidence in favor of a metropolitan approach. The joint city-county approach to the metropolitan water-pollution problem with the county assuming responsibility for the construction, finance and operation of a metropolitan program has many advantages which include the following:

1. Responsibility for pollution abatement among the various localities is clearly fixed in a single agency. Reliance upon individual community effort raises the danger of needless delay, duplication of effort and uncoordinated or disappointing results.

2. There is economy in construction and maintenance. The construction of one plant to serve the larger part of the City of Syracuse, in Onondaga County, and the West Side Sanitary District to the west of the city would save over $2 million.

3. There are economies and increased efficiency in the joint operation of a single pollution abatement system. With a broader base of financial support and a larger administrative unit, it is possible to hire more highly specialized personnel than would be possible if each of the communities proceeded to solve their pollution needs on an individual basis.

4. Joint action insures that pollution will in fact be reduced or eliminated. With a metropolitan approach it is possible to develop a plan for identifying all sources of pollution and to proceed with a comprehensive orderly plan for the abatement of the pollution.

The Onondaga County Sewage System serves over 250,000 people in the metropolitan Syracuse area. The total population of the area in 1958 was over 400,000: the area itself covers about 165 square miles. The fringe-area sanitation difficulties present in Onondaga County are very similar to sanitation problems prevalent in all metropolitan areas.

All major sanitary sewerage and sewage treatment projects in the metropolitan area of Syracuse are the responsibility of the Onondaga Public Works Commission. This same group also reviews all sanitary sewage systems and treatment plants proposed to be constructed in Onondaga County outside of incorporated villages and cities.

The Onondaga Public Works Commission is an agency created by a special act of the New York State Legislature in 1933; the act has been amended several times since. The Commission is composed of eight members appointed by the Board of Supervisors. Four members must be appointed from the city and four county residents from outside the city.

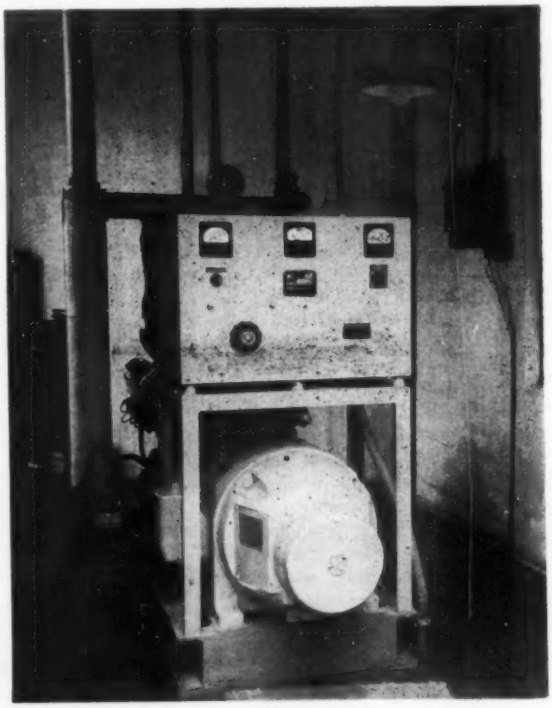
The Commission operates and maintains trunk sewers, pumping stations and treatment plants. It executes such responsibility by recommending the creation of sanitary districts or treatment plant districts to the Board of Supervisors. It is the responsibility of the Board of Supervisors to establish or create such districts after a public hearing.

A sanitary district is created to permit the construction, operation and maintenance of trunk sewers, pumping stations and sewage treatment plants. A treatment plant district can construct, operate and maintain the sewage treatment plant facilities only.

Each district can encompass and serve more than one municipality. District facilities are financed by general obligation bonds sold on the open market, backed by the credit of the county, and must be authorized by the Board of Supervisors following a public hearing. The annual budget for each district, including debt service and operating costs must be approved and authorized by the Board of Supervisors. All funds necessary for operation of the districts are collected by an ad valorem tax on all properties within each district. No other property in the county is taxed for any of the costs incurred by a district. The Commission is studying sewer service charges to finance these districts on the basis of use rather than ad valorem taxes. A recommendation will be made to the Board relative to some form of sewer rental financing program following the completion of the facilities now under construction.

Trouble-Free Operation

Savings of $1,800 per year are claimed by the sewage-purification crew of Santa Cruz, California, for this methane-burning electric power generating unit at their 5-mgd plant. The unit has logged more than 14,400 hours—that's more than 599 days of continuous trouble-free operation. Preventive maintenance is the only work that has been performed on the outfit since its installation. The Le Roi Model 62-309, H-540 V-8 sewer-gas operated engine drives a General Electric Generator.



use MUELLER® *angle meter stops*

. . . the angle meter stop with "O" ring seal!

Heavy phosphor bronze spring washer under cap seats the key and permits it to be unseated slightly for easy turning.

Large bronze cap protects ground key surfaces and includes strong, accurate check. Downward force on cap unseats key slightly for easy turning. Flat head or lock wing.

Shear-resistant silicon bronze drive-lock pin solidly anchors cap to key.

"O" ring gives dependable, water-tight, **double** seal at top of key and prevents leakage when key is unseated during operation of stop.

Square bronze ring solidly secures meter coupling nut and permits it to swivel freely. Nut is drilled for wire seal.

Heavy inverted bronze key is accurately machined and individually ground and lapped into the body for water-tight contact over its entire seating area.

Inverted key design uses water pressure on key as additional seating force. The higher the inlet pressure, the greater the seating force.

Single side port in key permits rotation of key 180° from "open" to "closed" position. Greater ground key sealing surface gives longer stop life.

Heavy water works bronze body, key, cap and coupling nuts give maximum strength and resist corrosion.

Opposed convex surfaces of the coupling give line contact initially to permit joint to be made-up quickly and easily.

End of riser pipe flange is not compressed by convex surfaces and gives greater resistance to pipe pulling out.

Mueller Copper Service Pipe Connection inlet includes regular Mueller Copper coupling nut and eliminates loose connecting ring. Meets AWWA specifications.

Extra long skirt on coupling nut supports pipe and prevents leaky joints due to riser pipe movement.

Before your next water meter installation, carefully consider these features. They are typical of the great attention to detail in research, design and engineering which becomes a part of every Mueller product made for the water industry. Mueller Angle Meter Stops are available in a complete range of sizes and styles. Write for complete information.

MUELLER CO. Since 1857 SERVING the Water and Gas Industries QUALITY

MUELLER CO.
DECATUR, ILL.

Factories at: Decatur, Chattanooga, Los Angeles; In Canada: Mueller, Limited, Sarnia, Ontario

Stretching the long arm of the law in Louisiana's capital

BATON ROUGE, LA. — Day and night, 13 Harley-Davidson Servi-Cars cover 30.2 square miles in this progressive city of 125,000.

Capital investment for all-purpose patrolling

...versatile Harley-Davidson Servi-Cars

Here's an investment that pays off by stretching both equipment and manpower dollars. Officers on Harley-Davidson Servi-Cars are busy men about towns large and small — patrolling business and residential areas . . . marking cars . . . checking meters . . . shifting from intersection to intersection for spot traffic direction. Just as important, Servi-Cars pay off in economical operation and simple maintenance.

They're crime-stoppers, too! Don't forget that "seeing is behaving." The Servi-Car mounted officer's street-level ability to see and be seen discourages potential lawbreakers.

And Servi-Cars are kind to your officers. The smoothest riding three wheelers ever built, they offer cushion comfort . . . reduce rider fatigue. See the new Servi-Car at your dealer. Or write Harley-Davidson Motor Co., Milwaukee 1, Wisconsin for informative new folder.

HARLEY-DAVIDSON

Police Motorcycles

Vertical prestressed concrete cylinders, driven deep into the Gulf bottom, form a stable, economical bulwark to safeguard small boats in the Pass Christian area.

Concrete Cylinders Protect Gulf Boat Basin

Pass Christian, Miss. has installed a 975-foot-long breakwater by driving 40-foot x 54-inch-diameter prestressed concrete cylinders into the bed of the Gulf of Mexico.

The unusual breakwater, which protects the city's small boat basin, proved more economical than conventional steel sheet-pile or rock-fill structures. Bid competitively at $205 per linear foot, the cylinders were driven 20 feet into the Gulf bed in pile-like rows on 5-foot centers, leaving a clear space of six inches between them. This space was filled with creosoted timber sheet piles, chamfered to fit the curvature of the cellular units.

Timbers placed on opposite sides of each opening were drawn tight by galvanized bolts. Before a precast cap beam was placed, the cells were filled with sand to a point 2½ feet below the top to increase the structure's rigidity and to support cast-in-place concrete that was poured through holes left in the precast cap. An aluminum handrail completed the installation.

The attractive breakwater is very stable against high waves. It was installed in a very short time in water eight to ten feet deep, with the top of the wall 11 feet above mean Gulf level. The entrance channel is 75 feet wide and 10 feet deep.

Piles were fabricated at the plant of Prestressed Concrete Products Co. Inc., Mandeville, La., licensee of Raymond International Inc., New York, N. Y., barged to the site and driven into the bottom, which consisted of eight feet of soft mud, underlaid by a 25-foot-thick stratum of medium sand.

Flood Control District Becomes Park Area

The Los Angeles County Department of Parks and Recreation has taken over management of the largest combined acreage to come under its jurisdiction—the 1,836-acre Puddingstone Dam Reservoir Recreation Area, south of San Dimas, Calif., in the San Jose Hills.

The issuance of licenses and inspection of the more than 1,000 pleasure boats—up till now the function of the Los Angeles County Flood Control District—is only a part of the administrative job that the urban county recreation agency will handle. The department will supervise and enforce rules concerning fishing, boating, swimming and picnicking at the reservoir, which, when full, will cover 473 acres and store 17,398 acre-feet of water.

Already announced is a master plan for development of the area. Its first step—preparation of a topographical map—is under way at the office of the county engineer.

Suggested projects for the Puddingstone area include: A swimming pool, expansion of picnicking areas, improved boating facilities, an adequate interior road system with scenic parking areas, overnight camping areas, skeet, rifle, trap and pistol ranges, archery range, nature museum, nature, riding and hiking trails, administration building, model plane and car area, hobby areas for fossil collectors, painters, photographers, etc.

The Flood Control District office will eventually transfer operation of all concessions to the Parks and Recreation Department also. These will include boat rentals, fishing supplies and food.

FOUNTAIN OF YOUTH, 1880... The well of the Little Red Schoolhouse was a popular, if not always healthful, gathering place for children. The old tin dipper in its lip-to-lip travels carried more than its share of disease.

THE MODERN DRINKING FOUNTAIN...eliminates the community cup... substitutes for it clean, pure, safe water distributed nationwide over a network of dependable cast iron pipe.

U.S. cast iron **PIPE**

FOR WATER, SEWERAGE AND

U. S. PIPE AND FOUNDRY COMPANY

but better than ever today!

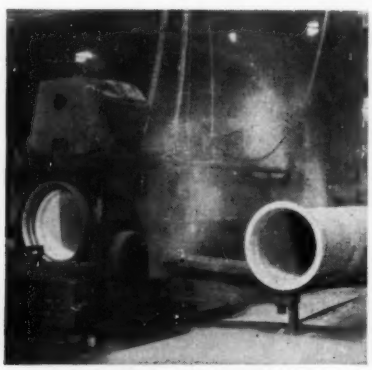
Care and precision from mine to main insure U. S. Pipe quality

The nation's health depends largely on water. And most of this water is distributed through cast iron pipe.

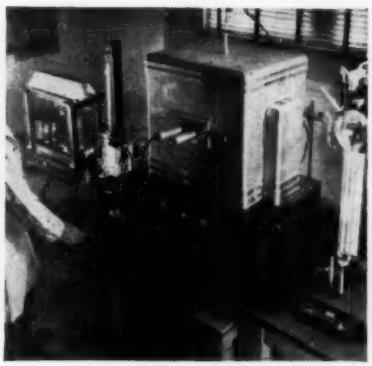
U. S. Pipe, therefore, exerts every effort to make its product dependable, long-lived and trouble free. From mining of ore... through blast furnace... to final shipping, every length of U. S. Cast Iron Pipe is checked and rechecked for quality.

This end-to-end supervision is another reason U. S. Pipe measures up to the promises made for it... and to the responsibilities placed on it in service.

QUALITY BEGINS HERE . . . at one of U. S. Pipe's mines near Birmingham where ore is mined.



PIPE NEWLY CAST . . . 24" diameter and 18 feet long rolls out on skids from centrifugal casting machine.



SCIENTIFIC TESTING . . . Determining the chemical properties of U. S. Pipe, one of many quality checks.

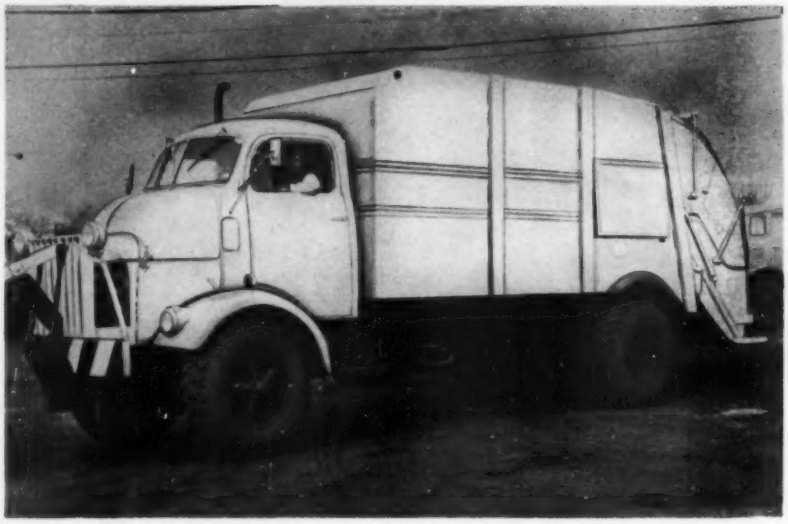
INDUSTRIAL SERVICE CAST IRON

Birmingham 2, Ala. *A wholly integrated producer from mines and blast furnaces to finished pipe.*

High Visibility for Refuse Trucks

The Chicago Department of Sanitation is currently testing a new fluorescent paint on refuse trucks to determine its effectiveness as an added safety feature. The new safety paint, known as Hi-Viz, is manufactured in various colors by Lawter Chemicals, Inc. of Chicago. This truck was painted entirely in one color, yellow-orange.

The need for high visibility to protect refuse trucks from collisions is of special importance since they are continually entering or coming out of "blind alleys" or being parked where approaching traffic must veer around them.



A Reward for Tips on Trash Tossers

Dearborn, Mich. has amended its anti-litter law to include a reward for citizens who provide tips leading to the apprehension of trash-tossers. The amended law reads:

"The City of Dearborn will pay a reward of Fifty ($50.00) Dollars to any person who gives information which leads to the arrest and conviction of any person for a violation of this ordinance. Provided however, that no police officer or any other employee of the City shall be eligible for a reward under the provisions of this ordinance.

"Any person who claims a reward pursuant to this ordinance shall file a claim in writing with the City Controller in which he shall state the title of the court, the names of the parties and the court number of the case in which a person was convicted of a violation of this ordinance and a statement of the information which he gave which led to the arrest and conviction of such person. The City Controller may also require an appropriate certificate from the Corporation Counsel or other prosecuting attorney to the effect that the information given by the claimant led to the arrest and conviction of such person."

Dearborn's Mayor Orville L. Hubbard proposed the reward system as recommended by the City Beautiful Commission. In making the proposal, Mayor Hubbard stated that throwing litter on the streets is equivalent to throwing away money, for additional sanitation crews and equipment are needed to clean up the debris.

Warning signs, "$100 Fine Throwing Trash On Highway," are posted on city vehicles and at hundreds of intersections throughout the city. Now, with the reward system in effect, a "fine" warning and the reward notice will be painted on either side of the city's police cruisers.

Florida City Conducts Large Scale Landfill

St. Petersburg, Fla. began using the sanitary landfill method of refuse disposal in 1944. Today two International crawlers, a TD-15 and TD-14, compact more than 95,000 tons annually into an 80-foot-wide trench, 25 to 30 feet deep. A three-foot earth cover completes the operation. The fill site comprises 160 acres, with 40 acres remaining to be used. The city has a population of 170,000 persons with a 20% increase during the winter months.

Layne

the only complete water service organization

Complete service means undivided responsibility

In an age of specialization there is a definite advantage in doing business with a company offering a COMPLETE SERVICE . . . providing *all* the services allied to the field of water.

Only Layne with its network of Associate Companies, and over 75 years of experience, all backed by Layne Research can offer its customers a complete water service which makes Layne unique in the industry.

World's Largest Layne *Water Developers*

LAYNE & BOWLER, INC., MEMPHIS

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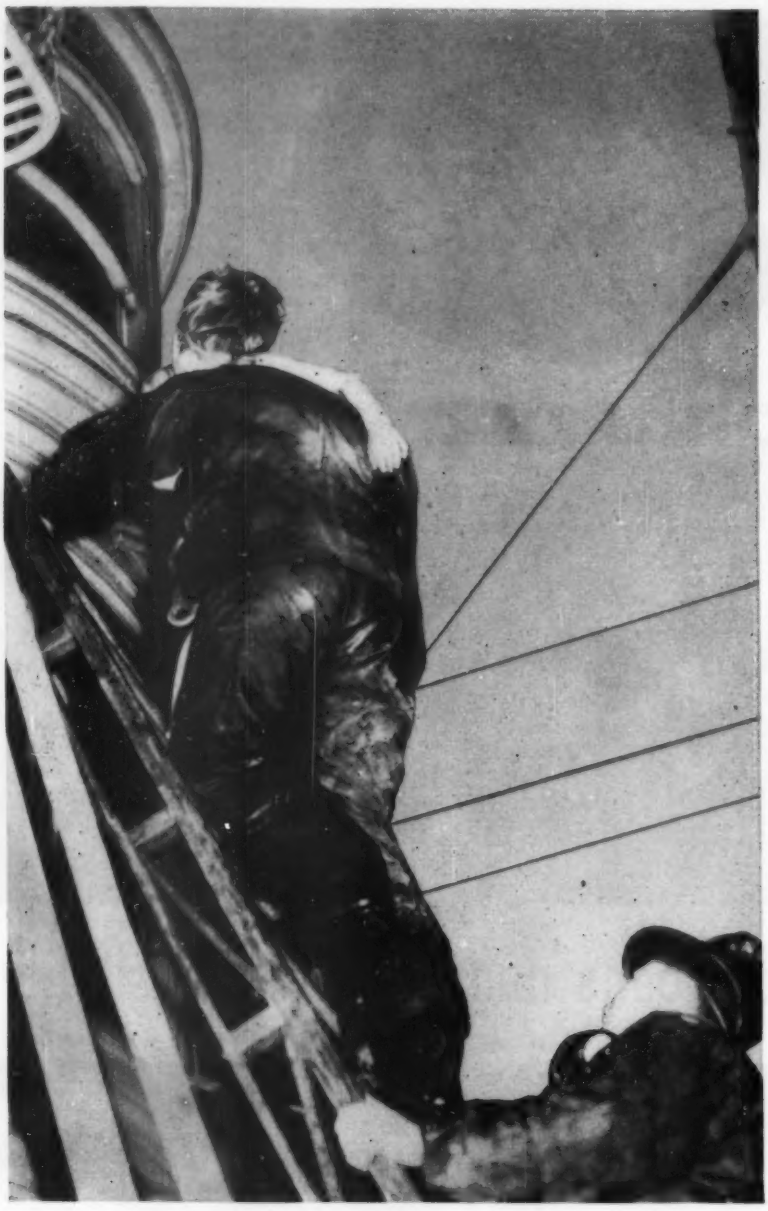
LAYNE ASSOCIATE COMPANIES THROUGHOUT THE WORLD



Your children are not safe in school....

unless your schools are equipped with a Master Box that *automatically* and *instantly* notifies your Municipal Fire Department . . . *plus* an interior fire alarm system which *simultaneously* sounds an alarm to evacuate the children.

Fire strikes and spreads so rapidly that any delay — even seconds — means greater loss of life and property. Provide *complete protection* for your schools with a Gamewell Master Box, located outside or inside the school building, that sends one vital message — FIRE — *without delay.*

Are you making your community a safer place to work and live?

Equally important is providing adequate protection for your growing community with a sufficient quantity of "Pull" type fire alarm boxes. Modern up-to-date cities such as Chicago, Ill., Burlington, N. C., Tulsa, Okla., Quincy, Mass., and Petersburg, Va., are employing a planned program of adding Gamewell fire alarm boxes and Master Boxes to meet the demands of their growth. With a Gamewell fire alarm system you can provide your community with the same maximum protection *and also give your taxpayers a two-way saving . . .*

- Loss of life and property damage are decreased because the Gamewell system gives fast, positive alarms.
- Reduction of insurance rates by upgrading Fire Underwriter's classification saves substantial sums for property owners.

Don't fall behind the growth pattern of your community. Protect yourself, your property owners, and your children with a Gamewell system that is directly connected to your Municipal Fire Dept. The Gamewell Company will be happy to conduct a FREE survey of your existing fire defenses and make recommendations that can give your community the protection it needs. Write or call The Gamewell Company, 1270 Chestnut Street, Newton Upper Falls 64, Massachusetts.

Gamewell®

FIRST...WHEN SECONDS COUNT

The dogs are trained to attack only on the command of their handler.

Baltimore's Police Dogs Report

The Canine (K-9) Corps in the Baltimore City Police Department (see the article in THE AMERICAN CITY, October 1957, p. 173, by Police Commissioner James M. Hepbron) uses 21 trained police dogs to cover an area of 92 square miles with a population of 1,000,000 inhabitants. Of course the dogs were not the only reason for the over-all reduction of crime in this large city during 1957. However, the psychological effect of an officer with a dog on patrol has often been of invaluable assistance.

We have found that trained dogs are particularly effective for apprehending criminals fleeing from the scene of crime; detecting burglars secreted in large industrial plants and warehouses, dispersing crowds, trailing and detecting wanted persons hidden in wooded and suburban areas, particularly at night.

An officer to work with a dog must want to do so. He cannot be forced into the job as it would reflect in the animal. All officers must volunteer and they are then carefully screened. They must meet these requirements:

a) They must live in their own home with an adequate yard to house and care for a dog.
b) The officer's wife and family must approve.
c) They must own and have available an automobile to use at all times.
d) Their personal record must be good.

The cost of the K-9 Corps consists of salary of personnel plus $200 per year per dog for food, equipment and veterinary charges. All dogs must be German shepherd dogs (male), sound of body, physically fit and of good even temperament—neither vicious nor shy. Each dog is assigned to an officer and lives with him at his home. Each officer is taught to train his own dog. The dog is first trained in obedience, next attack work and then trailing (location of lost persons or criminals). Finally the dog is trained to locate articles or materials that could be used as evidence. It is extremely important in the attack training that the dog attack only on command of his handler and release his hold immediately when told.

LEO T. KELLY, *Police Inspector*
City of Baltimore, Md.

The police dog must have a good even temperament; it should be neither vicious nor shy.

Santa Clara County Gives Closer Fire Protection

Activities are increasing in the central fire protection district of Santa Clara County, Calif. Everything is going up but not in smoke. Alarms of building fires have risen from 140 in 1948 to 475 in 1958. An indication of counter measures is given by installations of fire hydrants, 80 in service in 1948, and 1120 in 1958.

Assessed valuation rose from $47,000,000 in 1948 to $164,000,000 in 1958. Protection measures are suggested by wages for fire personnel rising from $45,000 to $430,000 in the ten years. Present personnel comprises a chief and his assistant, three battalion chiefs, a district secretary, 15 captains, 51 firemen, and 45 volunteer firemen.

Apparatus

Apparatus consists of 13 pumping engines, six tank trucks, and four pickups, all equipped with three-way emergency radio. Besides the headquarters station at 528 Tully Road, San Jose, there are six other stations.

OUR MUNICIPAL NOTEBOOK

Nation Will Be 85% Urban in 40 Years

The city will dominate every section of the country by the year 2000, according to an extensive population study, "Metropolitanization of the United States," just released by the Urban Land Institute of Washington, D. C.

The study is the work of Dr. Jerome P. Pickard, economic geographer and population analyst. Dr. Pickard's projections show that by the year 2000, 85% of the country's population, some 320 million people, will live within urban areas. The expansion of the nation's 300 metropolitan areas is estimated to demand a land area of 55,000 square miles, an area equal to the State of Illinois. (A metropolitan area is an urban area including one or more adjacent cities with an area population of 100,000 or more).

(1) Ten super-metropolitan areas will contain one-third of the nation's population in forty years. Dr. Pickard sees these sectors as having the same general complexity and geographic extent as today's New York City metropolitan area.

(2) The new super-areas in the year 2000 will include a "Chesapeake and Potomac City" of 9.5 million, including Baltimore and Washington D. C.; a "Delaware Valley City" of 8.5 million centering on Philadelphia; a "South East Florida City" of 6.5 million with Miami as its hub; a "North East City" of 6.5 million around Boston; and a "Cuyahoga Valley City" of 5 million, including Cleveland.

(3) Among the older super-metropolitan areas, New York is expected to continue to be the nation's greatest population center. Its population in the year 2000 is projected at 23 million; that of Los Angeles, 20 million; Chicago, 11 million; Detroit, 9.5 million; and San Francisco, 7.5 million.

(4) Another 40% of the American people will live in 285 smaller metropolitan areas of between 100,000 and 5 million population.

Dr. Pickard's study is the second in the new series of "Research Monographs" being issued by the Urban Land Institute.

Copies of the "Research Monographs" are $4 each and may be ordered from the Urban Land Institute, 1200 18th Street N.W., Washington 6, D. C.

Air Pollution Control Notes

Pollution Solution Film

"Air Pollution, Everyone's Problem," a film produced by the Kaiser Steel Corporation, is available for general showing. In full color and sound, the 20-minute film explains certain aspects of the air pollution problem and shows how Kaiser solved its air pollution problem at the Fontana plant. Organizations may obtain the film free of charge by writing to Public Relations Department, Kaiser Steel Corporation, P. O. Box 626, San Bernardino, Calif.

A Change in the Name

The Smoke Abatement Department of Asheville, North Carolina, is no more. It is now the Air Pollution Control Department. Anthony J. Lord, Chairman of the Advisory Board for Air Pollution Control, said the new name was taken to keep pace with the expanding scope of air pollution control work in Asheville and throughout the country. He said that everywhere smoke abatement departments are shifting their emphasis from an attack on smoke alone to an attack on all forms of air pollution.

Plant Grant

The United States Public Health Service has awarded a grant of $18,715 to the California Arboretum Foundation, Inc., at Arcadia, for a two-year study of the effect of air pollution on tissue growth of plants. Dr. William S. Stewart, director of the Foundation, will head the study team.

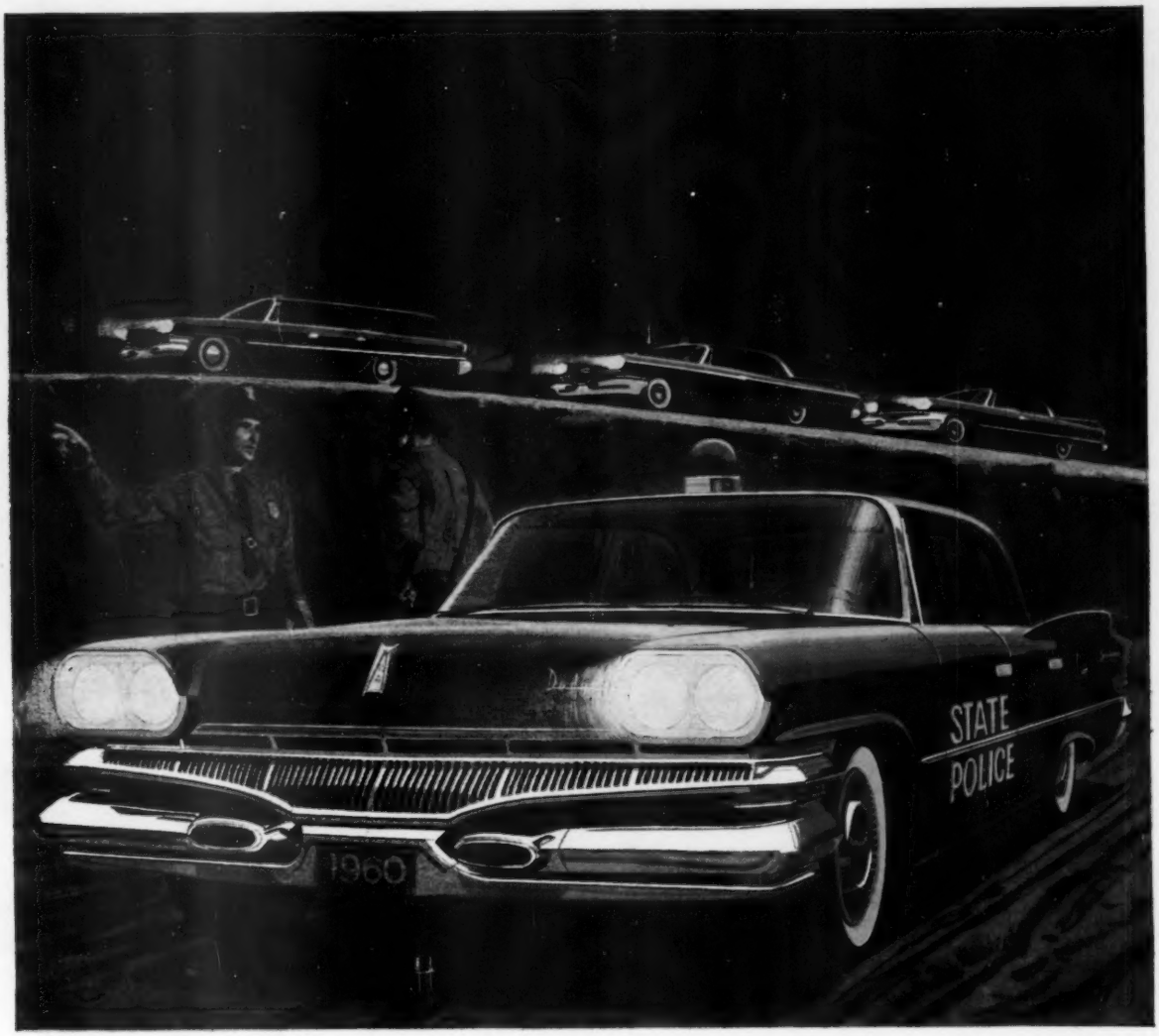
Pollution Attacked on Both Coasts

Broad attacks on the air pollution problem have been undertaken on opposite sides of the country. In California, Governor Edmund G. Brown has signed a bill instructing the California State Department of Public Health to "develop and publish" standards for the quality of California air, by February 1, 1960. The Department already is working on the establishment of maximum allowable standards for the emission of exhaust fumes from motor vehicles. These, too, are due on February 1st. Governor Brown has taken the position that proper legal standards must be set throughout the state before controls are established. Meanwhile, in the New York Metropolitan Area, four official agencies have voluntarily formed the New York-New Jersey Cooperative Committee on Interstate Air Pollution, "to resolve those problems of air pollution which are interstate in character." The four agencies—the New York City Department of Air Pollution Control, the New York State Board of Air Pollution Control, the New Jersey Air Pollution Control Commission and the New Jersey State Department of Health—stated: "We are convinced that air pollution can be controlled only by vigorous action, sensitive to the needs and problems of the community. By undertaking this coordinated program of action, we believe we can achieve the required control and do so without the expenditure of vast sums of money."

Greenburg Elected

Dr. Leonard Greenburg, Commissioner of the New York City Department of Air Pollution Control, was elected President of the Air Pollution Control Association, at the Annual Meeting in Los Angeles. APCA is the national technical society in this field. Dr. Greenburg, who is a professional engineer as well as a medical doctor, is the Medical Member of the New York State Board of Air Pollution Control. He has been Commissioner of Air Pollution Control in New York City since the Department was established in November 1952.

City of Baltimore, Md. stations.



Front and center: Dodge Dart 4-Door Police Pursuit. Left to right: Dodge Dart Station Wagon, '60 Dodge 2-Door and Dodge Dart 2-Door Police Pursuits.

New Police Pursuits by DODGE Put You in Command!

ON TURNPIKE, CITY OR SUBURBAN STREET

Pursuit, patrol, whatever the action—new Police Pursuits by Dodge respond like no police specials before! Here are four models of two distinctly separate cars: all-new Dodge Dart and the authoritative new '60 Dodge. Mighty power, sure economical operation, swift maneuverability, added endurance come from 1960's greatest automotive advances: Unibody construction, "Economy Slant" 6-cylinder design, Ram Induction V-8 performance, many more! Add to these heavy-duty features proven in action, and you have police cars that truly command respect, truly deserve it. They're loaded with toughness and muscle to make you master of the most difficult law enforcement situations! For economy, dependability, performance, safety and driver comfort—here are police cars beyond compare.

DODGE DART and '60 DODGE Police Pursuits

SWIFT—Five authoritative new engines, plus cat-quick cornering and sure-footed roadability, make new Dodge Dart

POWER-PACKED, AGILE,

Performance to put you on top of every police job with ease! Extra durability to keep you there day in, day out! Dodge gives you both, in 1960 more than ever before!

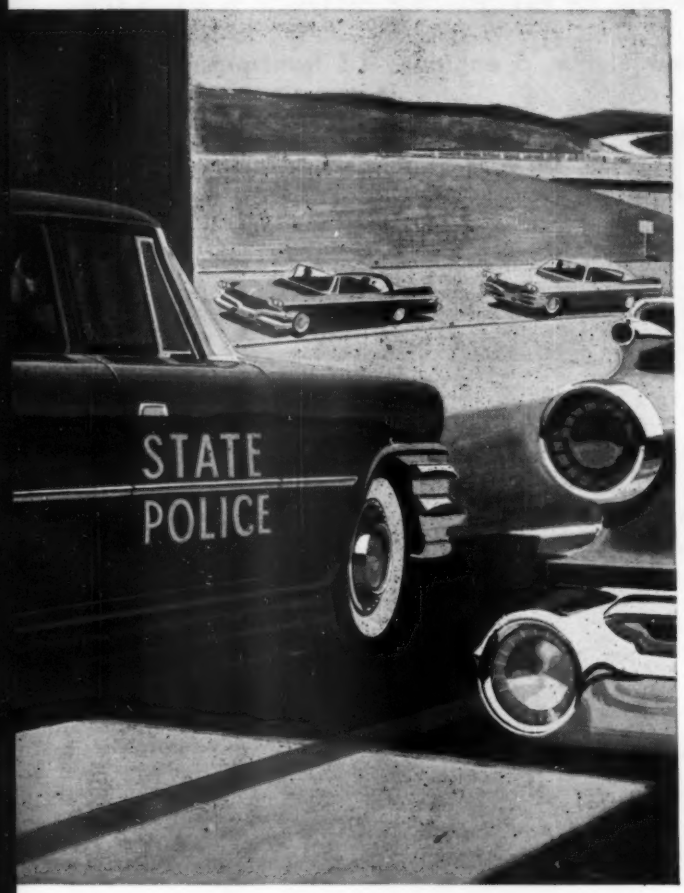
Here's spirited, dependable engine power that discourages law violations before they happen, that gives every officer added pride and confidence! Here's fast, predictable handling plus driver ease and comfort that let officers work more efficiently with less fatigue! And above all, here is tough, dependable construction that takes the hardest service right in stride.

Take your choice of two great new cars in four models! Pick the light weight and responsiveness of the compact, all-new Dodge Dart and its 118" wheelbase. Or choose the ruggedness and unmatched high-speed handling of the big, brawny 122" wheelbase '60 Dodge.

Police Pursuits by Dodge for 1960 feature the dramatically greater comfort, strength and safety of revolutionary new Unibody construction. They offer the lively yet economical performance of the new Economy Slant "6", most modern 6-cylinder engine in the industry. They offer the breath-taking, all-out power of the new D-500 Ram Induction V-8's, with special torque-boosting manifold based on racing engine principles. And as standard equipment you get famed Torsion-Aire Suspension and Total-Contact Brakes. Special heavy-duty equipment, designed in close cooperation with working lawmen, is available for those who need it.

Only Police Pursuits by Dodge give you so much that's truly valuable in law enforcement work!

DODGE DART and



and '60 Dodge Police Pursuits more than the match for every highway challenge.

Exceptional New Economy or HP/Weight Ratios Up to 1 to 12

A radically new 6-cylinder engine, 5 great new V-8's and 5 manual and fully automatic transmissions allow you to choose the power team that exactly meets your needs. Engines start with the new Economy Slant "6", range through various degrees of economy and power to the new D-500 Ram Induction 383 cu. in. V-8 (one h.p. per 12 lbs. in the new '60 Dodge 2-Door Police Pursuit). Transmissions include PowerFlite, TorqueFlite and new TorqueFlite Six, first fully automatic transmission designed exclusively for 6-cylinder use.

Famed Torsion-Aire Ride

Torsion bar front suspension, direct-acting Oriflow shock absorbers and outboard-mounted rear leaf springs make up Torsion-Aire, admittedly the finest suspension in the industry. Officers enjoy a ride as smooth as silk. Even more important, they get complete control of a car that's agile and able.

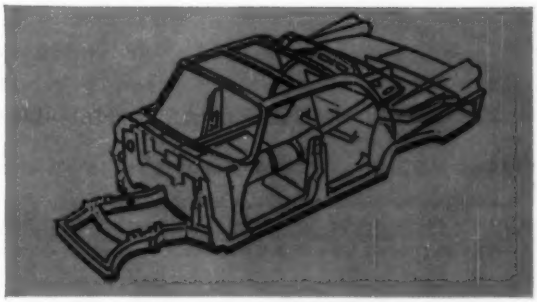
Total-Contact Brakes

To match the "go power" of its great new engines, Dodge features the husky stopping power of Total-Contact Brakes. Their unique design puts your whole brake lining to work, not just part of it. You get the safety of quick, straightline stops, time after time after time, even in the foulest weather.

BUILT TO TAKE IT!

REVOLUTIONARY NEW UNIBODY CONSTRUCTION!

New comfort, safety, strength and durability come to Dodge with this new advance in body construction. Unibody design is one piece, does away with conventional frame construction. You drive and ride surrounded by a "one-piece fortress of steel" that gives you maximum roominess, maximum protection, faster, easier entrance and exit, more relaxed seating. Unibody isolates road noise and vibration, all but eliminates squeaks and rattles and helps give new Police Pursuits by Dodge unrivaled road and handling qualities. What's more, 11 spray and deep-dip treatments make each Unibody virtually rustproof!



'60 DODGE Police Pursuits

INDUSTRY'S BIGGEST MODEL AND EQUIPMENT SELECTION LETS YOU FILL YOUR NEEDS EXACTLY!

2 cars • 2 wheelbases • 4 models • 5 engines • 5 transmissions

DODGE DART

118″ wheelbase—light, compact, nimble!

Dodge Dart 2-Door Police Pursuit (118″ wheelbase)

Dodge Dart 4-Door Police Pursuit (118″ wheelbase)

Dodge Dart Station Wagon Police Pursuit (122″ wheelbase)

'60 DODGE

122″ wheelbase—big, brawny, powerful!

'60 Dodge 2-Door Police Pursuit

No other police cars on the road give you such opportunity to fill your needs exactly! Equip your "finest" with the "finest." Contact your nearest Dodge Dealer.

Look at These Standard Features!

One-piece Unibody construction • Torsion-Aire Suspension • Free-Flight Power Engine Mounting • Total-Contact Brakes • 225 cu. in. Economy Slant "6" on 6-cylinder Dodge Dart models • 318 cu. in. Red Ram V-8 on 8-cylinder Dodge Dart models • 361 cu. in. Super Red Ram V-8 on '60 Dodge • Manual heavy-duty transmission with heavy-duty clutch on Dodge Dart • Manual heavy-duty T-85 transmission with heavy-duty clutch on '60 Dodge • Painted to owner specifications • 7.50 x 14″ tires and 14″ x 5K wheels on Dodge Dart Police 2- and 4-door Pursuits • 8.00 x 14″ tires and 14″ x 5½ K wheels on Dodge Dart Station Wagon Police Pursuit and '60 Dodge 2-Door Police Pursuit.

Basic Police Pursuit Equipment Available at Extra Cost!

361 cu. in. Super Red Ram V-8, available at extra cost on Dodge Dart V-8 models • 383 cu. in. Special Police Pursuit V-8, available at extra cost on '60 Dodge and Dodge Dart • Map light • 30-amp. low cut-in generator with double ball bearings • 70-amp.-hour battery and heat shield • Heavy-duty 8¼″ 8-cyl. rear axle and heavy-duty 8-cyl. Hi-speed prop. shaft • Heavy-duty chassis springs, front and rear, and heavy-duty 1.05″ dia. torsion bars • Sway bar • Heavy-duty shock absorbers, front and rear • 11″ x 2½″ brakes, front and rear • 12″ x 2½″ heavy-duty brakes • All-vinyl interior trim • Heavy-duty seat springs, front and rear (standard on '60 Dodge) • Kick board in back of front seat (standard on '60 Dodge) • Variable-speed electric windshield wipers • Foam rubber pad in front seat and/or rear seat.

Additional Extra-Cost Options!

383 cu. in. D-500 Ram Induction V-8 with Ram Manifold, dual 4-barrel carburetor, special valve springs and camshaft, heavy-duty brake, 8.00 x 14″ tires, 14″ x 6K wheels—extra-cost option on '60 Dodge and Dodge Dart • High-output generator (50-amp. Bosch and 40-amp. Auto-Lite) • Alternator, Leece Neville heavy-duty—60-amp. • PowerFlite Transmission with high temp. seals (available with V-8 engines except D-500 V-8's) • TorqueFlite Transmission (available with V-8 engines) TorqueFlite Six Transmission (available with 6-cylinder engine) • Heavy-duty 12″ x 2½″ front and rear brakes (standard with 383 cu. in. engines, 14″ x 6K wheels and 8.00 x 14″ tires required) • Foam rubber pad on rear seat • Wiring for roof flashers • 8.00 x 14″ tires with 14″ x 5½ K wheels optional at extra cost on Dodge Dart 2- and 4-Door Police Pursuits • 8.00 x 14″ tires and 14″ x 6K wheels • 6.70 x 15″ tires and wheels • 7.10 x 15″ tires and wheels • Hi Capacity radiator • 7-blade fan and shroud • Special police nylon tires 8.00 x 14″ • Calibrated speedometer • Radio suppression package.

ENGINE SPECIFICATIONS—POLICE PURSUITS BY DODGE FOR 1960

MOST MODERN 6 IN THE INDUSTRY!

***Economy Slant* "6"—standard on Dodge Dart 6-cylinder models**

Type OHV, Manifold semi-ram type, Cylinders 6, Taxable horsepower 27.74, Bore 3.40 inches, Stroke 4.13 inches, Displacement 225 cu. inches, Compression ratio 8.5 to 1, Carburetor single downdraft, Torque 215 lb.-ft. at 2800 r.p.m., Horsepower 145 at 4000 r.p.m.

***Red Ram V-8*—standard on Dodge Dart V-8 models**

Type OHV 90-degree V-8, Cylinders 8, Taxable horsepower 48.9, Bore 3.91 inches, Stroke 3.31 inches, Displacement 318 cu. inches, Compression ratio 9.0 to 1, Carburetor dual downdraft, Torque 340 lb.-ft. at 2400 r.p.m., Horsepower 230 at 4400 r.p.m. (with Carburetor 4-barrel, Torque 345 lb.-ft. at 2800 r.p.m., Horsepower 255 at 4400 r.p.m.)

***Super Red Ram V-8*—standard on '60 Dodge, available at extra cost on Dodge Dart V-8 models.**

Type OHV 90-degree V-8, Cylinders 8, Taxable horsepower 54.3, Bore 4.12 inches, Stroke 3.38 inches, Displacement 361 cu. inches, Compression ratio 10 to 1, Carburetor dual downdraft, Torque 390 lb.-ft. at 2400 r.p.m., Horsepower 295 at 4600 r.p.m.

***Special Police Pursuit V-8*—available at extra cost on '60 Dodge and Dodge Dart**

Type OHV 90-degree V-8, Cylinders 8, Taxable horsepower, 57.8, Bore 4.25 inches, Stroke 3.38 inches, Displacement 383 cu. inches, Compression ratio 10 to 1, Carburetor 4-barrel, Torque 435 lb.-ft. at 2800 r.p.m., Horsepower 325 at 4600 r.p.m.

NEW TORQUE-BOOSTING RAM MANIFOLD!

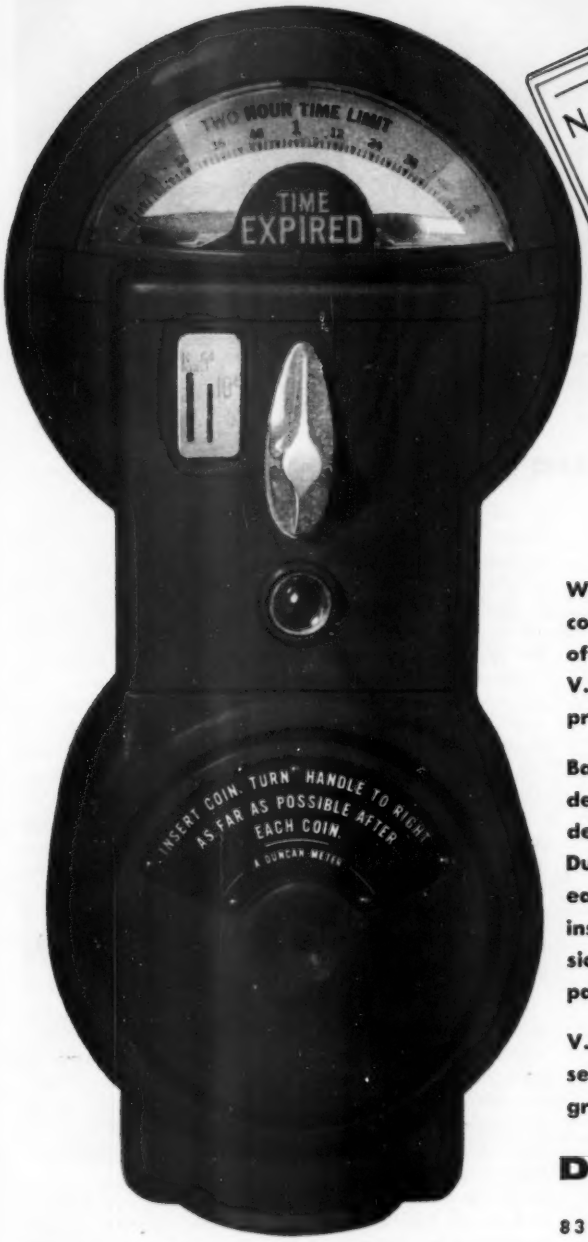
***D-500 Ram Induction 383 cu. in. V-8*—available at extra cost on '60 Dodge and Dodge Dart**

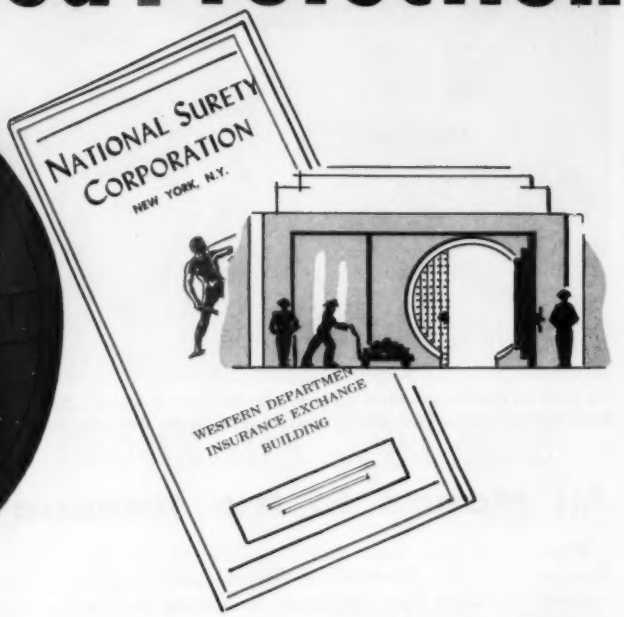
Type OHV 90-degree V-8, Manifold ram induction type, Cylinders 8, Taxable horsepower 57.8, Bore 4.25 inches, Stroke 3.38 inches, Displacement 383 cu. inches, Compression ratio 10 to 1, Carburetor dual 4-barrel, Torque 460 lb.-ft. at 2800 r.p.m., Horsepower 330 at 4800 r.p.m.

The policy of Dodge Division of Chrysler Corporation is one of continual improvement in design and manufacture wherever possible to assure a still finer car. Hence, specifications, equipment and prices are subject to change without notice.

Only THE DUNCAN V. I. P.* *offers*

Vault Insured Protection*





World's first parking meter purposely created to combat the costly destruction of vandalism and theft of meter revenues. Exhaustive tests prove Duncan's V.I.P. is the answer to this serious ever-increasing problem which plagues almost every city, big or small.

Backed with insurance — by Duncan. Further evidence that the Duncan V.I.P. represents the highest degree of security ever found in a parking meter, Duncan backs its V.I.P. with *written* insurance. With each V.I.P. meter order, Duncan issues a one-year insurance policy indemnifying the city against physical loss due to vandalism. This policy is issued and paid for by Duncan.

V.I.P. exclusive Submerged mystic-lock* increases security to the coin compartment. Non-exposure greatly reduces malicious lock area vandalism.

*TRADE MARK

DUNCAN PARKING METER

DIVISION OF MOTOR PRODUCTS CORPORATION

835 N WOOD STREET • CHICAGO 22, ILLINOIS

The World's Leader in Parking Meters

As soon as the streets were plowed, loaders of all types went to work and kept a fleet of 35 large trucks busy hauling the snow away.

All Hands to the Rescue

When a 10-inch snow storm hit Peoria, Ill. on January 20, 1959, Director of Streets and Sewers Leonard H. Caro lost little time in getting outside help. With only two Caterpillar motor graders, two snow-plow trucks and nine salt-and-cinder tailgate spreaders available, he realized that his crews could not handle the job alone. So, on an emergency basis, excavating, general and trucking contractors were called upon to supplement the city's equipment with anything that could move snow.

But help came from other sources too. The Caterpillar Tractor Company, the LeTourneau-Westinghouse Company and Richwoods and Peoria Townships loaned equipment to the city on a community-service basis—at no cost.

Snow started to fall about 8:00 A.M., and by 3:30 P.M. a six-inch blanket covered the city, tying up traffic in the downtown area. This condition was finally cleared up by 9:00 P.M. and it was then that city crews and contractors began the five-day around the clock clean-up job.

The Peoria Park District, the Peoria School Board, the Central Illinois Light Company, the Peoria and Pekin Union Railroad, the Peoria Water Works, Foster-Jacobs, Inc., and N. E. Finch also lent a hand by providing numerous dump sites for snow disposal.

The downtown area and the main arterials were cleared in the first 36 hours and then all residential streets were plowed. In all, 37 pieces of heavy earth-moving equipment and 35 ten-yard tandem-wheel trucks were used. Equipment ranged from motor graders and front-end loaders to large Tournapulls.

Total cost to the city for clean-up work by the contractors came to approximately $46,000, for which 150 miles of streets were plowed and 44.3 miles cleared of all snow. On the streets cleaned, the city estimated 10 inches of snow were removed from 1,170,000 square yards of street surface area. This amounted to about 323,780 cubic yards picked up and hauled to dump areas at an average price of 15.4 cents per cubic yard—compared to the cheapest Illinois cost for light earthmoving at 44 cents per cubic yard.

Street department crews plowed approximately 120 miles of streets during the five-day period with the two graders and two plows, in addition to carrying out repeated salting, cindering, spot clearing and emergency treatment of specific trouble spots. Overtime pay amounted to $6,600.

Weather-bureau reports show that such a storm occurs only about once in 27 years on the average and, when this one came, all hands got in the act to dig out the city.

Rock Salt Proves Its Worth In Safety Program

Since 1956 Allentown, Pa. has used bulk rock salt to make the icy streets safe for motorists. Since starting this practice, no major accidents and no fatalities have occurred during bad weather. Director of Streets and Public Improvements Lloyd E. Grammes feels that the bulk rock-salt method of controlling the ice hazard on the streets has been both satisfactory and economical.

Allentown purchases rock salt during the summer and stores it in a large quonset hut. Usually the city purchases for storage about 500 tons. However, during the severe winter of 1957, about 750 tons were used to keep the 200 miles of streets safe for motor travel.

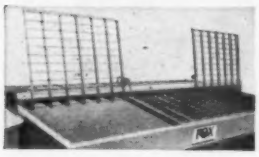
1959 SPECIFICATIONS for your files

FOX Mountable Materials Spreader

for sand • cinders • chips • salt • calcium chloride

MOUNTING

On or off any standard dump body in only 15 minutes. T-head fasteners, cranks and base adjustment channels make this possible. Truck is quickly freed for other work.

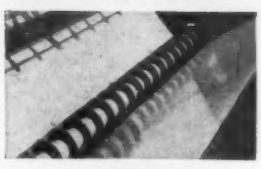


LOADING

Sturdy ⅜" rods make up cover grids that break up lumps. Allow only spreadable material to pass through. Increases spreading efficiency and prevents damage to mechanism.

DASH-MOUNTED CONTROLS

Fingertip control from inside cab makes operation a one-man job. Panel includes—spreader engine ignition and starter switches, volume regulation control and electric clutch switch. Sanding at speeds up to 40 MPH.



FEED AUGER

Heavy-duty feed auger eliminates feed aprons and chains, the source of most frequent breakdowns. Auger mounted on 4 Timken tapered roller bearings, completely shielded from abrasives.

SPINNER

Adjustable for 8 to 40 foot spreading widths. Works close to ground—spreads under parked and passing cars . . . ahead and beneath rear truck wheels for added traction.

GENERAL SPECIFICATIONS

Model	Box Length	Box Width	Weight Empty	Capacity Heaped* (yards)
8S57	8'	80"	2435	5
9S57	9'	80"	2610	5¾
10S57	10'	80"	2849	6½
12S57	12'	80"	3156	8

*4", 6" and 12" height additions to box increases capacity—up to 12 cu. yds. on Model 12S57

ENGINE —Wisconsin air-cooled, 18 H.P. @ 3500 r.p.m. with starter, generator and enclosed drive reduction.

BODY —10 gauge prime steel. All welded construction with reinforcing ribs.

BEARINGS —10 Timken tapered roller bearings and two sealed ball bearings plus engine bearings.

AUGER —Heat treated alloy steel. 7" O.D. progressive hard faced flights welded on 4" O.D. tube. Mounted on 4 Timken bearings.

CONTROLS —Manual controls outside driver's window, standard. Optional electric remote control panel on truck dash.

SPINNER —18" diameter. Height adjustable by 4 position lever for 8 to 40' spread.

MOUNTING —Quickly attached without drilling holes or welding.

GRIDS —⅜" rods on 3" centers. 4' and 5' sections.

SPECIAL USES —Ideal as Seal-coater for summer road work. Special attachment converts unit to a Trench Filler.

The Fox Materials Spreader will cut your labor, time and equipment expenses to the bone. A catalog . . . case history reports . . . even a no-obligation demonstration are yours for the asking. Write, call or wire collect today. After you put a Fox Spreader into service, we'll be able to add your name to our growing list of satisfied users.

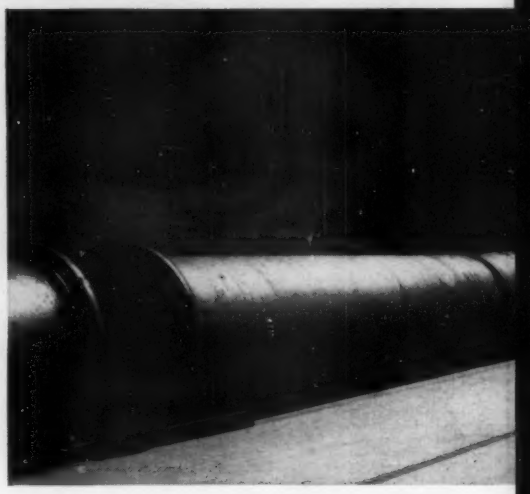
FOX RIVER TRACTOR COMPANY
Road Machinery Division

Dept. R15, 1020 N. Rankin St. • Appleton, Wisconsin

Phone—REgent 4-1451

"I PREFER CAST IRON PIPE TO ANY

Recently a questionnaire was mailed to water utility managers all over the U.S.A. One question asked was: *What kind of pipe do you prefer and why?* With 42 states heard from, the vote is overwhelmingly in favor of cast iron! Here are typical comments:



"Strength, resistance to corrosion . . . economical first cost, low maintenance and operating cost, good flow characteristics."

—North Carolina

"Our main system is entirely cast iron. It holds up good in 'hot' soil conditions and will not rust out. We are nearing the century mark on some of it, and it gives no trouble."

—Kansas

"Long life—strength—ease of tapping. We are located, as a city, over old mine workings, and subsidence of earth causes trouble on other pipe to a greater extent than on cast iron."

—Illinois

OTHER KIND"

"We have a very hilly city, pressures up to 170 p.s.i. Some of our mains are 90 years old. They were cast iron and are still giving good service."

—Iowa

"Having been used over a long period of time, it has proved its worth. Structurally safe. Easy to repair."

—California

So many good reasons . . .

- LONG LIFE. The cast iron pipe you install today will be performing economically a hundred years from now.
- HIGH CAPACITY FLOW. Cement-lined cast iron pipe will deliver the full-rated flow all through the years. No other pipe, size for size, can carry more water.
- CORROSION RESISTANCE. Long life proves it. Most water utilities are still using the first cast iron pipe they installed.
- GREAT BEAM STRENGTH. Cast iron pipe resists the effect of heavy traffic, shifting soils.
- TREMENDOUS LOAD RESISTANCE. 6" cast iron pipe (Class 150) withstands a load of nearly 9 tons per foot!
- PRESSURE-TIGHT JOINTS. You have a complete choice of leakproof, easy-to-assemble joints. You need a minimum of tools and work crew.
- EASE OF TAPPING. No tapping saddles needed. Takes threading best of all kinds of pipe.

. . . good reasons for you to choose

CAST IRON PIPE

THE MARK OF THE 100-YEAR PIPE

Cast Iron Pipe Research Association, Thos. F. Wolfe, Managing Director, 3440 Prudential Plaza, Chicago 1, Ill.

FREE CATALOGS

These Catalogs Will Help You

By checking over these listings you can secure without charge important up-to-date information on many of the problems which may be troubling your city.

Write directly to the address given or use the Post Card on page 55.

Eccentric Plug Valve for Sewage and Water Works

500 This valve is new to the ACF line. It is fully described in *Bulletin* AE-1059, which points out its compactness, its simplified design that assures 100% pipe area flow and virtually eliminates upkeep problems, and other advantages that result in greater efficiency. Write W-K-M DIVISION OF ACF INDUSTRIES, INC., P. O. BOX 2117, HOUSTON, TEXAS.

Continuous Rotary Vacuum Filters

501 Construction details, principles of operation, and use of these new FEinc String Discharge continuous rotary vacuum filters are described in amply illustrated *Bulletin* 103. Of particular interest to municipalities will be their use in sewage applications and their ability to produce a cleaner, drier cake at lower cost. Write FILTRATION ENGINEERS DIV., AMERICAN MACHINE AND METALS, INC., 554 12TH AVE., EAST MOLINE, ILL.

Gives Double Protection Against Highway Hazards

502 To a flashing red warning light the Traffic Flasher Alarm adds a loud warning horn, which is triggered when a vehicle overrides the light and runs over an air hose placed ahead of a closed lane. This warns maintenance, construction and utility crews "to get out of the way" and again warns the motorist to slow down. For details, write FALCON ALARM CO., INC., 243 BROAD ST., SUMMIT, N. J.

Fluorescent Safety Paint— Free Sample

503 A business letterhead request, addressed to LAWTER CHEMICALS, INC., DEPT. AC, 3552 TOUHY AVE., CHICAGO 45, ILL., will bring you a ¼ pint sample and brushing color brochure on HI-VIZ fluorescent colors that make street signs, waste containers, fire hydrants, warning barricades, emergency vehicles, etc. 4 times brighter.

Low-Cost Refuse Collection

504 New Literature from BORG-WARNER CORP., INGERSOLL, KALAMAZOO DIV., DEPT. AC., 1810 N. PITCHER ST., KALAMAZOO, MICH., highlights the Sani-Matic Refuse Loader, a hydraulic loading attachment that converts highway dump trucks into efficient, low-cost, house-to-house refuse collection units without impairing the truck's efficiency for normal dump work.

Optical Plummet Transits

505 Two Gurley transits now feature built-in optical plummets to eliminate plumb bobs, speed set-up time and improve accuracy. In giving full facts, *Bulletin* OP-100 points out that these plummets will focus on distant objects, such as encountered in bridge or building construction, or as close as 12" for setting over point. For a copy write W. & L. E. GURLEY, 527 FULTON ST., TROY, N. Y.

New Reflective Street Sign

506 Visible day and night. Broad angle night-time brilliance. Maximum readability. Nonfading. Permanent legend. Esthetically pleasing. Low Cost. These are all characteristics of the new reflective porcelain enamel sign, introduced by FERRO ENAMELING CO., 1100 5th AVE., OAKLAND 21, CALIF. For the full story, request descriptive literature.

Reduce Time-Cost Factor

507 Designed and engineered to meet all municipal time recording needs, these time recorders, daters, time stamps and watchmen clocks help eliminate time leaks and increase efficiency of city departments. They are fully described in literature, available from LATHEM TIME RECORDER CO., 82 THIRD ST., N. W., ATLANTA, GA.

Protect Painted Metal Structures Against Color Loss

508 Metal protection paints based on M50 pigments are protected against all 4 causes of color loss, and so stay brighter and retain their hue longer. For full details, request the 24-page booklet, "Defense In Depth." Write NATIONAL LEAD CO., 111 BROADWAY, NEW YORK 6, N. Y.

1960 Dodge Police Cars

509 Power-packed, agile and rugged, the two new 1960 Dodge police pursuits are available in a choice of 4 models, 2 wheelbases, 5 engines and 5 transmissions to help meet municipal law enforcement needs exactly. For details on the Dodge Dart and new '60 Dodge, write DODGE DIVISION OF CHRYSLER CORP., P. O. BOX 1259, DETROIT 31, MICH.

Litter Baskets

510 Whether placed at bus stops, in public parks, in alleyways or along main traffic avenues, these litter baskets will help keep your city clean. Rigid, low-cost and weatherproof, they are built to last. For complete description, write DESIGNERS METAL CORP., 662 HOFFMAN ST., HAMMOND, IND.

Improved Fire Engines

511 New features of the 900 Series cab-forward fire engines that assure greater performance and safety, increased utility and more efficient operation, contribute to less maintenance, are highlighted in a descriptive brochure, available from AMERICAN LAFRANCE, A DIVISION OF STERLING PRECISION CORP., ELMIRA, N. Y.

A Scooter for Municipal Use

512 A recent addition to the motor scooter market, the highly maneuverable, well-balanced 2-wheel Topper offers high fuel economy—up to 100 miles per gallon. It lends itself nicely to parking meter service and other municipal chores, and offers both comfort and safety to the operator. For full story, write HARLEY-DAVIDSON MOTOR CO., MILWAUKEE 1, WIS.

Land Reclamation Brochure

513 Municipal planning boards and engineers interested in cost-saving methods that will efficiently and profitably convert waste land and unstable soils into valuable sites suitable for high load bearing foundations, highways, airport runways, etc. will find "Men, Methods and Machinery" of great value. For a copy, write CONSTRUCTION AGGREGATES CORP., 120 S. LASALLE ST., DEPT. E. CHICAGO 3, ILL.

Checks on Vehicle Speed by Radar

514 Patrol cars equipped with this radar timer, a two-pronged "rabbit ears" antenna that operates like a spotlight and swings 270°, can accurately detect speed limit violators in either approaching or departing lanes of traffic. Its range is adjustable and readings are instantly made on a 0 - 100 mile per hour scale meter. For full story, write MUNI-QUIP CORP., 991 KING ST., DECATUR, ILL.

New Traffic Aids

515 Among significant new traffic aids introduced by ECONOLITE CORP., 8900 BELLANCA AVE., LOS ANGELES 45, CALIF., are a graphic traffic counter that provides a clear, accurate, continuous graphic record of traffic volumes, a die-cast neon pedestrian signal with aluminum housing, and an incandescent pedestrian signal of advanced design and improved legibility.

Protects Sewage Lines from Excess Pressure

516 *Bulletin* SEW-1, just released by GOLDEN-ANDERSON VALVE SPECIALTY COMPANY, fully describes a new sewage surge relief valve designed to prevent damage from overpressure in sewage lines by opening immediately and automatically whenever the line pressure exceeds a pre-determined setting. For a copy, write the company at 1200 RIDGE AVE., PITTSBURGH 33, PA.

Cast Iron Pipe Booklet

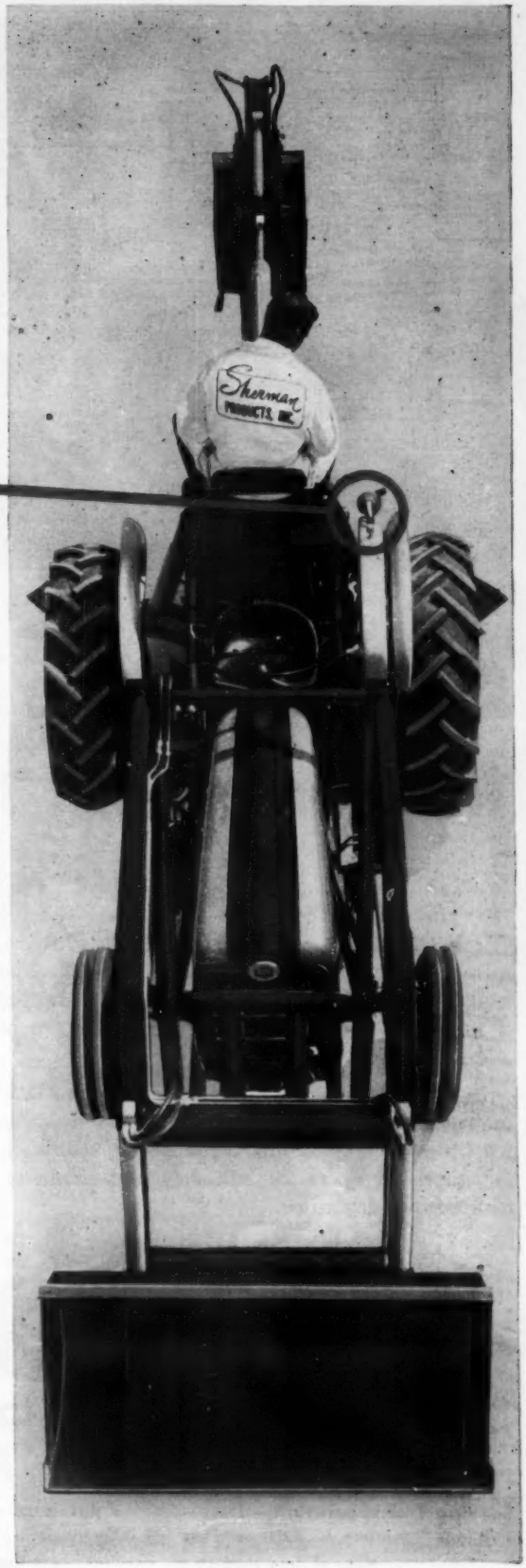
517 The booklet, "Introducing Griffin Pipe", describes the new Griffin-20 cast iron pressure pipe and Griffin's manufacturing facilities. Copies can be obtained by writing to GRIFFIN PIPE DIVISION, GRIFFIN WHEEL COMPANY, COUNCIL BLUFFS, IA.

The Garbage Disposal Problem

518 "Where Does It Go From Here", *Form* No. D930, rather thoroughly considers the immediate and long-range benefits of the sanitary landfill, its various methods, proper equipment and site selection. For a copy of this valuable 12-page illustrated booklet, write ADVERTISING DIVISION OF CATERPILLAR TRACTOR CO., PEORIA, ILL.

(See page 52 for more Bulletins)

A Clean Hydraulic System Is A MUST!



Only Sherman Power Diggers and Loaders Have the Easy-Check Filter Gauge!

Only the Sherman Digger and Loader have the easy-check filter gauge that guarantees positive hydraulic performance. Yes, now for the first time in the industry, all guesswork is eliminated! For the exclusive Sherman easy-check filter gauge tells you at a glance if your hydraulic filter is giving proper performance!

What does this exclusive Sherman development mean to you, the owner?

Better filtration means:

- Longer equipment life!
- Less downtime!
- Fast filter cleaning without draining tank!

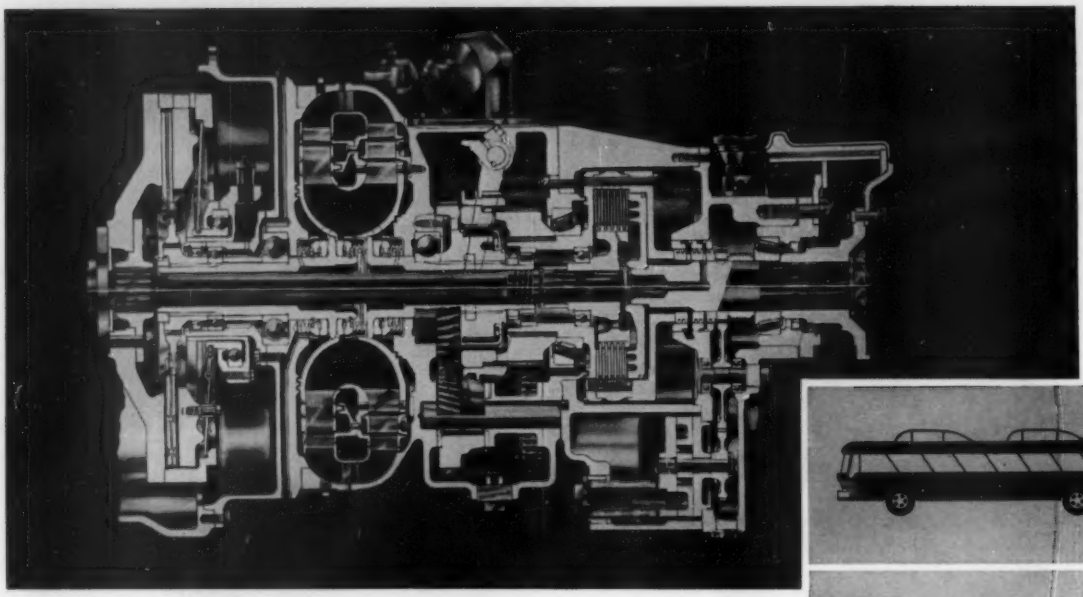
In short, the exclusive Sherman filter gauge means—You Get More For Your Money When You Buy Sherman!

Write for details on *all* Sherman features or for filter gauge Bulletin No. 1097.

SHERMAN S PRODUCTS

POWER DIGGERS • LOADERS • SOIL WORKING TOOLS

SHERMAN PRODUCTS, INC., Royal Oak, Michigan



Spicer 183 Turbo-Matic...

The Transmission That Thinks for Itself!

Just turn the ignition key and accelerate . . . the 183 Turbo-Matic does the rest. Acceleration is smooth and rapid from standstill to direct drive, regardless of load condition or driver skill. The mental and physical fatigue of professional driving is materially reduced. Drivers are fresher, more alert, all day.

In buses and emergency vehicles Turbo-Matic multiplies available engine torque by as much as 5.6 times to provide unexcelled power utilization for improved operating efficiency and minimum maintenance downtime.

Many American cities have discovered the operational advantages of the heavy-duty Spicer 183 Turbo-Matic transmission. Ask the Dana engineers to help you adapt it to your vehicles.

. . .

Write for your free copy of booklet No. 806, which describes the outstanding features of the Turbo-Matic transmission.

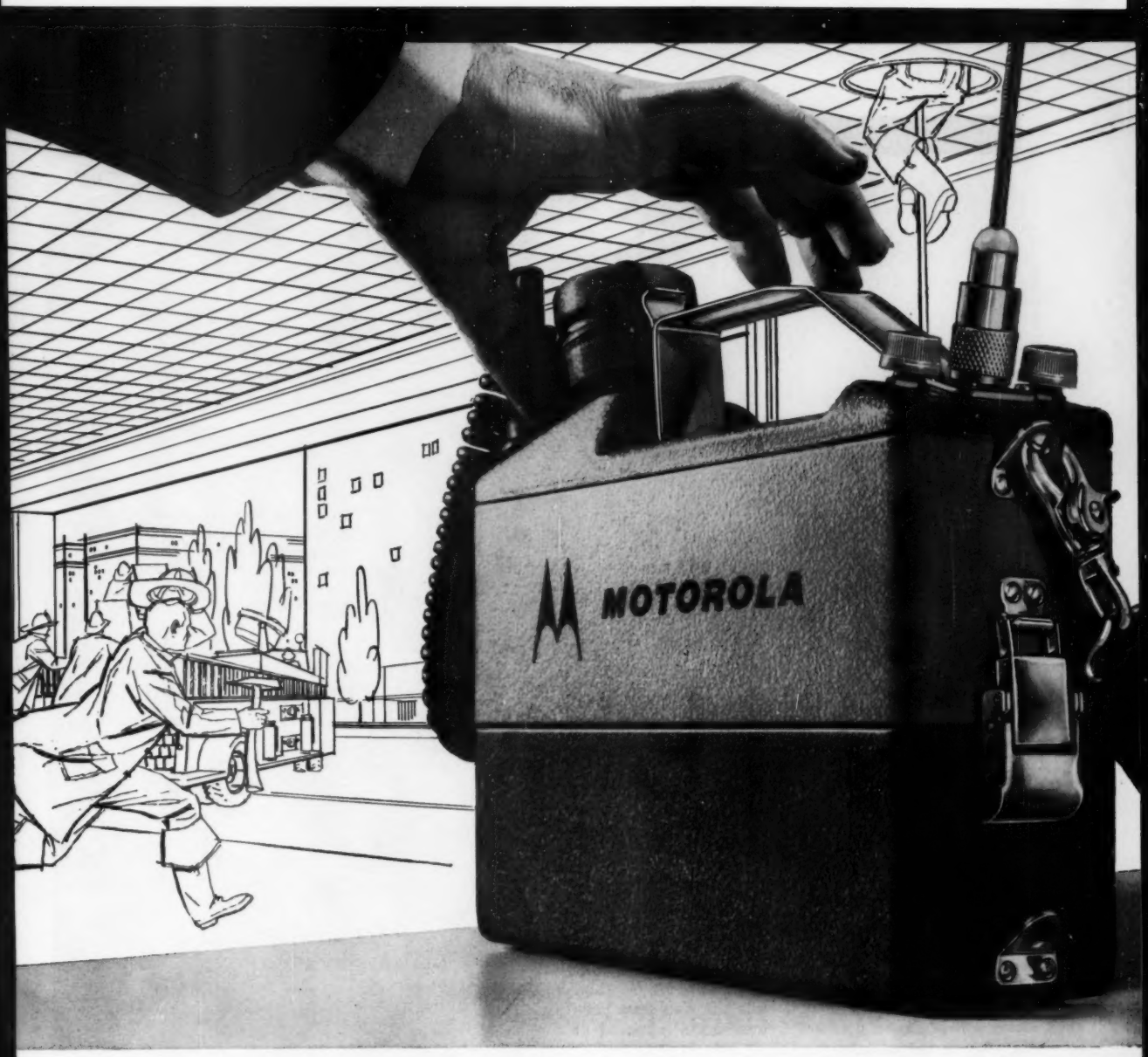
DANA Spicer

DANA CORPORATION

Toledo 1, Ohio

Serving Transportation—Transmissions • Auxiliaries • Universal Joints • Clutches • Propeller Shafts • Power Take-Offs • Torque Converters • Axles • Powr-Lok Differentials • Gear Boxes • Forgings • Stampings • Frames • Railway Drives

Many of these products are manufactured in Canada by Hayes Steel Products Limited, Merritton, Ontario



Be sure to take it with you...
YOU'LL NEED IT!

The instant you arrive, you're fighting for *control* . . . and those *first few minutes are critical!* Your Motorola "Handie-Talkie" portable radios will help you get reports from every trouble spot . . . and relay instructions in *seconds.* You are in constant contact with all members of your fire fighting team.

For faster fire fighting, make sure that you have *enough* "Handie-Talkie" portables.

Transistors, plated chassis and other improvements increase reliability . . . make this the smallest, lightest portable 2-way radio available. You also benefit from the long battery life and obsolescence-free design. And only Motorola can offer you a portable radio with a full 8 watts output. One of the 43 "Handie-Talkie" radios is ideal for your needs. Write for complete literature today.

MOTOROLA *Handie-Talkie*® RADIOPHONE

Motorola Communications & Electronics, Inc., 4501 Augusta Blvd., Chicago 51, Illinois, A Subsidiary of Motorola, Inc.

Litter and heavy particles of dirt are deposited within the enclosed body while the two cyclone units remove the fine particles before expelling the air.

Small Vacuum Units Help Keep Boston Clean

In Boston, street sweeping in the commercial areas during periods of heavy traffic, which is also the period when most litter accumulates, is almost impossible with the conventional mechanical street sweepers. To overcome this problem, the city recently purchased two Tarrant "City Slickers." Basically these units consist of a jeep-mounted, self-contained vacuum unit. Litter is drawn up through a hood suspended under the vehicle and deposited in a net-type bag located in the body of the machine. The small heavier particles such as dirt pass through the net bag and drop out on the body floor, while the fine dust particles are removed by two cyclone units mounted at the rear of the vehicle.

Each weekday afternoon, between the hours of 3:00 p.m. and 7:00 p.m., these machines operate in the downtown area. Their size permits them to work alongside the curb, in traffic, without interfering with traffic movement. Our theory is that these units will pick up litter from the streets as fast as it is deposited by shoppers and workers leaving the business area during the late afternoon rush hour, thereby keeping the streets relatively clean for the evening. This theory appears to be working quite well.

The two "City Slickers" also work in the downtown area five nights a week from midnight to about 7:30 or 8:00 a.m., removing the after-theatre and night-shopping litter so that the business area will be clean again for the morning.

These units do not replace the large sweepers, but supplement them, giving the larger units an opportunity to cover other areas. As previously mentioned, they are especially useful during heavy traffic periods.

JOHN F. FLAHERTY
Division Engineer, Sanitary Division
Public Works Department
Boston, Mass.

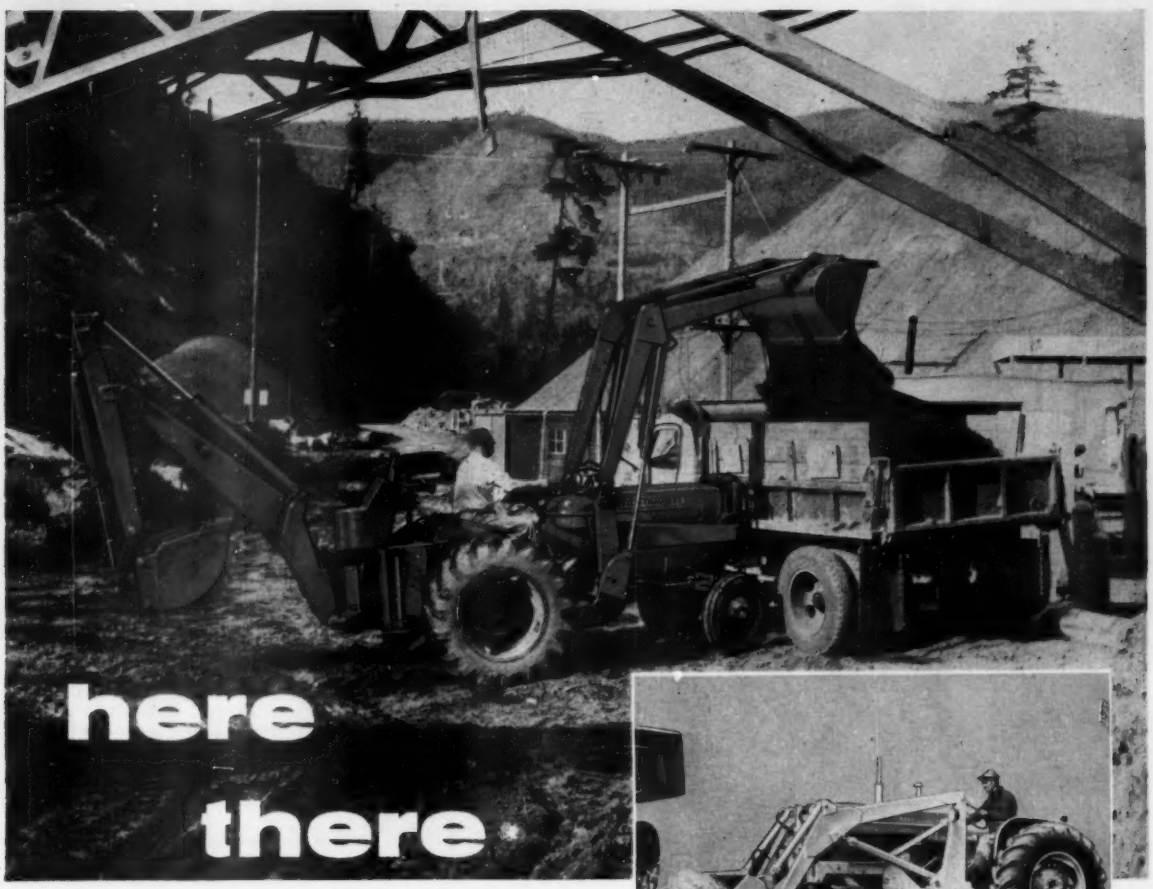
One man operates the unit, working in traffic with little difficulty. A small roller guides the hood against the curb face.

Toledo's Street Cleaning

During 1958, the Toledo, Ohio Division of Streets removed 24,815 cubic yards of street sweepings. In addition leaves accounted for another 13,950 cubic yards. Total expenditure for this work amounted to $686,035.90 or $2.01 per capita based on a population of 341,500. Work done included cleaning 21,692 basins and inlets, sweeping 32,355 curb miles, and picking up 32,921 Christmas trees.

Street maintenance crews carry out the dust treating program that is done once a year in May and June. Material used is an asphalt base road oil applied with a bituminous pressure distributor. The oil is covered with "chips" to control bleeding or tracking while the oil penetrates.

In 1958 maintenance crews applied 19,668 gallons of oil to lay the dust on approximately 80 miles of unimproved streets. Cost of this service amounted to 10.7 cents per sq. yd. for a total of 58,862 sq. yds.



everywhere!

In city after city, new and moneysaving uses of Allis-Chalmers utility tractors are being found: material handling, mowing, snow removal, street repair, timesaving excavating for sewer departments, and dozens more.

The big difference over other utility tractors is the *practical engineering* in Allis-Chalmers tractors — engineered features you'll use every day to cut costs, improve job performance. Take a look at the plus features listed below . . . and find out more!

ALLIS-CHALMERS

New SHUTTLE Clutch makes snow removal a snap! Direction control takes no foot work, no gear shifting!

D-10
D-12
D-14
D-17

Utility tractors from 31 to 63 engine horsepower with matched companion equipment to meet your needs!

it doesn't cost to find out about

- ☐ Tight turning ability
- ☐ Long wheelbase
- ☐ Low-Profile, High Clearance
- ☐ New SHUTTLE Clutch for the D-14
- ☐ Big-capacity companion equipment

ALLIS-CHALMERS MFG. CO.
Utility Tractors & Equipment
Milwaukee 1, Wisconsin

TELL ME MORE! Please send more information about the items checked at left. ☐ I'd also like to have a salesman call.

Name_____ Title_____

Firm_____

Address_____

City_____ State_____

CONTROL YOUR TRAFFIC AT A PROFIT WITH MI-CO MANUAL PARKING METERS

Post a MI-CO revenue collector and traffic officer every few feet along the curb to give motorists an equal break and make money for the city. Carefully engineered, sturdy MI-CO parking meters have only six moving parts, give continuous service in all seasons and weather, with almost no down-time. Can be set for any number of hours and coin combinations. MI-COs now serve over 500 cities, with many original meters still in use after 15 years. Before you place or replace meters, get the complete story of MI-COs and the new Security Collection System that protects every cent you collect.

A Symbol of High Quality

MI-CO PARKING METERS, P. O. BOX 668-AC, COVINGTON, KENTUCKY

(The Michaels Art Bronze Co., Inc., General Offices and Plant, Erlanger, Kentucky)

OTHER MICHAELS PRODUCTS: Architectural Metal • Curtain Walls
Display Cases • Reversible Windows • Tablets • Memorials • Signs

FREE catalogs

Write directly to the address given or use the Post Card on page 55.

Voting Equipment

519 Included among the complement of election equipment presented in the latest full-line catalog from DOUGLAS MFG. CO., DEPT. N, CRETE, NEBR., are Uni-pack collapsible electric booths, packaged for easy use, convenient movement and storage; folding booths; ballot boxes; election tables; voting booth lights and jury wheels.

Clarifiers and Thickeners

520 Users of horizontal flow gravity separation equipment for treatment of water supplies and water-borne wastes will find *Bulletin* WC-123 of great interest. It contains drawings and data on the main Rota-Rake model types which include bridge-supported and center-post designs from 10' diameter or square to over 150', and a discussion of design features. For a copy, write GRAVER WATER CONDITIONING CO., 216 W. 14TH ST., NEW YORK 11, N. Y.

Photoelectric Street Light Controls

521 An 8-page detailed *Technical Bulletin*, No. FP-830, gives complete de- information on these 6600A Series street light controls, designed to provide uniform turn-on, protect against accidental turn-off, surges and lighting, and give long, maintenance-free service. Write THE FISHER-PIERCE CO., 94 PEARL ST., SO. BRAINTREE 85, MASS.

Motor Control Centers

522 If you want up-to-date information on dependable control devices that can be organized into an efficient and complete motor control center to meet the requirements of municipal water treatment plants and pumping stations, write DEPT. W203, CUTLER-HAMMER, INC., MILWAUKEE 1, WIS.

Sanitary Engineering Equipment

523 *General Catalog-Book* 2617 illustrates the complete line of LINK-BELT CO., COLMAR, PA., water, sewage and industrial waste treatment equipment. It includes such new items as rotary distributors, floating covers for digesters and tractor-mounted sludge bed cleaners, as well as the more traditional mechanical screens, grit collectors, chemical feeders, settling tanks, scum skimmers, etc.

Diesel-Equipped Crawler Tractor

524 If you desire information on a rugged, dependable crawler tractor that delivers "low-cost power with a heavyweight punch," ask for illustrated literature on the new diesel-equiped "4401CD." Write JOHN DEERE INDUSTRIAL DIVISION, DEPT. 2087, MOLINE, ILL.

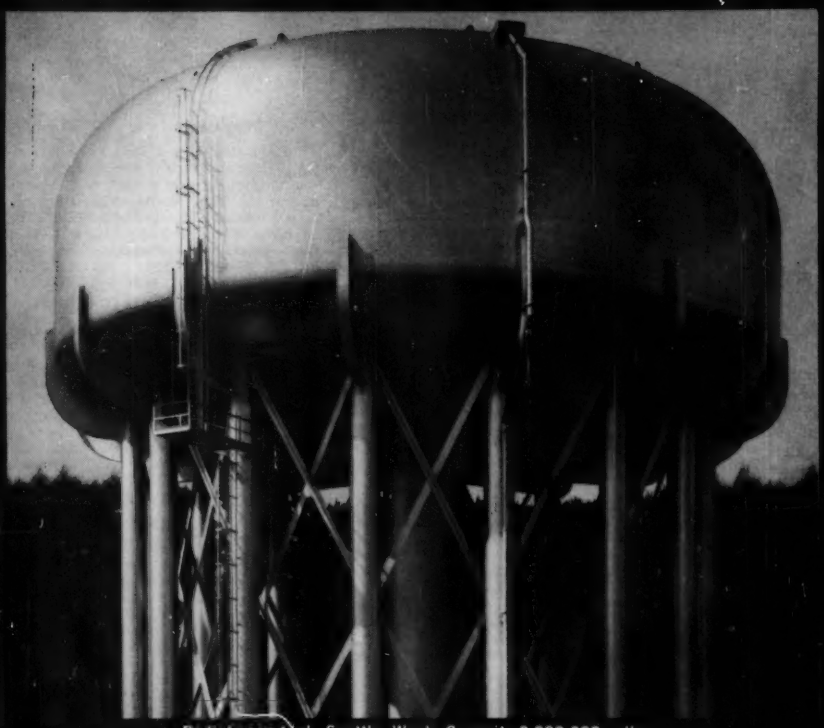
Back-Up Alarm Bell for Trucks

525 A gravity-actuated mechanical back-up alarm, which rings in reverse only, has been announced by WARN MFG. CO., RIVERTON BOX 6132, SEATTLE 88, WASH. Warn-A-Larm is recommended for use on municipal vehicles used primarily in business and residential areas or highway service. It is designed for easy installation on the rear wheel of trucks.

(See page 54 for more Bulletins)

PDM
ELEVATED STEEL TANKS

ELEVATED STEEL TANKS



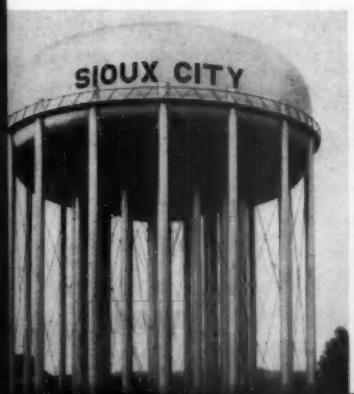
Radial cone tank, Seattle, Wash. Capacity 2,000,000 gallons.

FIRST IN EXCELLENCE

TO SERVE DEPENDABLY THE WATER STORAGE NEEDS OF MODERN AMERICAN COMMUNITIES

Pittsburgh-Des Moines

From the first PDM Elevated Steel Tank, pioneered in 1897, to the handsome structures of the present, *first quality* has been our continually-realized objective. You'll find in the wide range of PDM tank types and capacities the ideal unit for your requirements—guaranteed in performance and satisfaction. Let us submit a quotation.



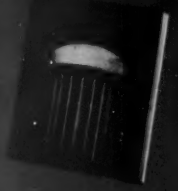
Toro-segmental tank, Sioux City, Ia. Capacity 2,000,000 gallons.

Radial cone tank, Independence, Kansas. Capacity 750,000 gallons.

Double-ellipsoidal tank, Melbourne, Fla. Capacity 300,000 gallons.

Pedestal sphere, Hawthorne, Calif. Capacity 250,000 gallons.

WRITE FOR this fully-illustrated 28-page "Modern Water Storage" brochure—detailing the range of PDM Elevated Steel Tanks. Free on request to our nearest office.



Pittsburgh-Des Moines Steel Company

Plants at PITTSBURGH, BALTIMORE, DES MOINES, SANTA CLARA, FRESNO, and STOCKTON, CALIF.

Sales Offices at:

PITTSBURGH (25)....3412 Neville Island
BALTIMORE (26).....Curtis Bay Station
NEW YORK (17) Suite 2715, 200 E. 42d St.
CHICAGO (3) 616 1st National Bank Bldg.
El MONTE, CAL.....P. O. Box 2012
ATLANTA (5) 361 E. Paces Ferry Rd., N.E.
DES MOINES (8).....913 Tuttle Street
DALLAS (1) Suite 1717, Southland Center
SEATTLE (1).....Suite 320, 500 Wall St.
SANTA CLARA, CAL....619 Alviso Road
DENVER (2).....323 Railway Exchange Bldg.

YOU NEED *These catalogs*

Write directly to the address given or use the Post Card on page 55.

Transistorized Hazard Warning Light

526 A new line of transistorized flasher safety lights feature a 2-way 7-inch lens unit, known as Model HD-2-7T, said to include a special high intensity bulb that can be seen over one mile in both directions. It provides more than 70 flashes per minute. For complete Transi-Flasher information, write R. D. FAGEOL CO., KENT, OHIO; request *Bulletin* L-912A.

New Line of Crawler Tractors

527 The first production unit in the new line of Eimco 103 crawler tractors recently rolled off the assembly line. It is a 100-hp tractor-dozer with hydraulic blade and incorporates many new engineering, construction and operating innovations. For details and descriptive literature, write THE EIMCO CORP., P. O. BOX 300, SALT LAKE CITY 4, UTAH.

Municipal Fire Hose

528 By writing to E. I. DU PONT DE NEMOURS & CO., INC., TEXTILE FIBERS DEPT., NEMOURS 5520-M, WILMINGTON 98, DEL., you can obtain (1) a descriptive brochure on lightweight, fast-drying Dacron-jacketed fire hose; (2) information on hose use and practices in communities under and over 10,000 population, and (3) a case history on the use of municipal fire hose in Knoxville, Tenn.

Water Works Fittings

529 A full complement of cast iron water works fittings—short body and mechanical joint, bell spigot, ring tite, fluid-tite—in a variety of sizes and classes are the subject of catalog literature offered by TRINITY VALLEY IRON AND STEEL COMPANY, P. O. BOX 664, FORT WORTH, TEXAS.

Clog-Proof Sewage Pumps

530 New features added to these Flush Kleen pumps are fully described in *Bulletin* 122-D, available from CHICAGO PUMP CO., 622 DIVERSEY PKWY., CHICAGO 4, ILL. Improvements include non-slamming by-pass valve, new Type BP by-pass inflow fittings, Flo-Thru strainer and Sealtrode sealed electrode floatless pump controller.

New Rotary Highway Mower

531 Descriptive literature from DANUSER MACHINE WORKS, INC., TULSA, OKLA., announces a heavy-duty 5-foot trail or mounted rotary mower designed especially to meet the needs of county and state highway departments for mowing highway rights of way. The unit is rugged, weighs over 800 pounds and incorporates essential safety features.

Refill Street Sweeper Brooms in 8 Minutes

532 A fully automatic broom refilling machine that is both portable and constructed ruggedly enables one man to refill a 5' rotary broom core in just 8 minutes. The unit is adaptable for all brooms (6" to 14" cores, 3' to 10' length, any length fibre 18" to 29", right or left winding) and is available on lease. For full facts, write PIERCE DICKENSON ENTERPRISES, 1020 PRICE ST., P. O. BOX 1221, POMONA, CALIF.

1960 Rambler

533 Municipalities that have made Ramblers a part of their car fleets know of their low initial cost, economical operation, high resale value, strong, safe construction. The 1960 Ramblers are said to offer all these advantages and more. For complete information, write FLEET SALES DEPT., DEPT. A-11, AMERICAN MOTORS CORP., 14250 PLYMOUTH RD., DETROIT 32, MICH.

Improve Digester Efficiency

534 A new issue of Walker Process' *Bulletin* 25-S-91, describes the Gas-lifter unit for digester circulation-mixing in detail and gives complete specifications. These units improve digester efficiency and are suited for installation in all types of digester covers. For a copy, write WALKER PROCESS EQUIPMENT INC., P. O. BOX 266, AURORA, ILL.

Police Car Catalog

535 There's much that's new in the '60 Plymouth Patroller 6, Patroller Special 8 and Pursuit Special 8. For the full story that will detail the more durable 3-speed manual transmission, faster, total-contact brakes, "dura-quiet unibody construction," etc., write for the *Plymouth Police Car Catalog*. Address requests to PLYMOUTH MOTORS CORP., 6334 LYNCH RD., DETROIT, MICH.

Measures Soil Strength

536 The engineer, contractor or architect will find this instrument a great help in determining strength classifications of cohesive soils on field exploration, construction sites and in preliminary laboratory studies. Its direct reading indicator maintains the reading until reset. For full facts on the CL-700, write SOIL-TEST INC., 4711 W. NORTH AVE., CHICAGO 39, ILL.

New Fire-fighting Boom

537 Descriptive literature lists 10 major advantages of the Pitman Snorkel: they add up to greater-than-ever safety, speed and versatility for fire fighting and rescue work. For full story, write SNORKEL FIRE EQUIPMENT CO., DEPT. AC, GRANDVIEW, MO.

Sewer Cleaning Equipment

538 Municipal personnel concerned with keeping sewer lines free-flowing will be interested in the latest literature from FLEXIBLE INC., 3786 DURANGO AVE., LOS ANGELES 34, CALIF., for it offers valuable information on sewer, storm drain and culvert cleaning equipment and methods.

Illustrated Pump Catalog

539 This is a complete-line catalog of pumps manufactured by THE DEMING CO., SALEM, OHIO. It gives construction, application and operation details of all pumps illustrated and includes performance tables. Of particular interest to municipalities will be the literature on deep well turbine, vertical and horizontal sewage, and centrifugal pumps.

Generate Economical Electric Power

540 If you are seeking to provide your community with a highly efficient, flexible and economical source of electric power, then you will want up-to-date information on equipment and an accurate analysis of your needs. GE has a wide selection of turbines and an experienced staff of application engineers to assist you. For details, write SECTION 271-5, GENERAL ELECTRIC CO., SCHNECTADY 5, N. Y.

Manual on Calcium Chloride in Concrete

541 This 40-page technical manual on "Calcium Chloride in Concrete" is available to concrete users. It contains data on major effects of calcium chloride, early and ultimate strength, cold weather protection, high early strength cement, and air entrained concrete. There is also a "special condition" section. Single copies are available free from CALCIUM CHLORIDE INSTITUTE, 909 RING BUILDING, WASHINGTON 6, D. C.

Portable Power Plant

542 "More power per pound and easily portable" is the way WINCHARGER CORP., SIOUX CITY 2, IA., describes its new Winco Lite 123-pound portable engine generator, rated at 2500 watts but able to develop up to 3000 watts a. c. intermittent power, and equipped with a 4-cycle Briggs & Stratton engine. For full story, write for descriptive literature.

Crawler-Mounted Front-End Loader

543 *Bulletin* K-636, now available from KOEHRING DIVISION OF KOEHRING CO., MILWAUKEE 16, WIS., highlights the Model 205 Skooper, a new full-revolving crawler-mounted front-end loader, which comes with rehandling, rock or general purpose bucket and is able to load up to 400 tons an hour. On-the-job pictures show the machine at work excavating, stockpiling, and during pavement-removing operations.

America's New Mounted Police

544 . . . is the title of a new brochure that describes established community helicopter practices, Office of Civil and Defense Mobilization procedures, the Hiller 12E helicopter and its emergency accessories available under the matching funds program. For a copy, write COMMERCIAL DIVISION, HILLER AIRCRAFT CORP., PALO ALTO, CALIF.

Outdoor Lighting Products

545 In addition to complete performance data on Pemco incandescent street and highway luminaires, municipal street lighting engineers can now obtain catalogs on mercury and fluorescent luminaires, poles, brackets and accessories, substation and protective lighting and area and floodlighting. Write PHILADELPHIA ELECTRICAL & MFG. CO., DEPT. A, 1200—36 N. ST., PHILADELPHIA 21, PA.

Coin Handling Equipment—Free Trial

546 This equipment accurately and quickly sorts, counts, packages and bags coin, and is ideally suited to handle coin collected from parking meters. For descriptive literature and details on a free trial offer, write BRANDT AUTOMATIC CASHIER CO., WATERTOWN, WIS.

New Type of Diffuser for Sewage, Water Treatment

547 Subject of *Bulletin* 6530-C is the Colaflex diffuser, a flexible, collapsible diffuser for introducing air or other gas into a liquid to produce agitation or to effect absorption or desorption. It is used in sewage treatment for pre-aeration or for aeration in activated sludge treatment and in water treatment for air flocculation prior to sedimentation. For details, write INFILCO INC., TUCSON, ARIZ.

(See page 59 for more Bulletins)

Postage Will be Paid by Addressee

No Postage Stamp Necessary If Mailed in the United States

BUSINESS REPLY CARD
FIRST CLASS PERMIT No. 281, SEC. 34.9 P. L. & R., NEW YORK, N. Y.

THE AMERICAN CITY MAGAZINE
470 PARK AVENUE SOUTH
NEW YORK 16, N. Y.

If you need information on any type of municipal service or equipment, these reply cards will get action in a hurry.

To THE AMERICAN CITY's Catalog Supply Department:

Please send me literature on items numbered as follows, starting on page 46:

500	512	524	536	548	560	572	584	596	608	620
501	513	525	537	549	561	573	585	597	609	621
502	514	526	538	550	562	574	586	598	610	622
503	515	527	539	551	563	575	587	599	611	623
504	516	528	540	552	564	576	588	600	612	624
505	517	529	541	553	565	577	589	601	613	
506	518	530	542	554	566	578	590	602	614	
507	519	531	543	555	567	579	591	603	615	
508	520	532	544	556	568	580	592	604	616	
509	521	533	545	557	569	581	593	605	617	
510	522	534	546	558	570	582	594	606	618	
511	523	535	547	559	571	583	595	607	619	

I would also like to receive manufacturers' booklets on.....

.....

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Name (Please Print).....

Title:.....

Address:.....

.....11-59

A Listing of Your Business Connection is Important

To. THE AMERICAN CITY's Catalog Supply Department:

Please send me further information on products described in "Purchasing News" section beginning on page 225 as circled below:

701	708	715	722	729
702	709	716	723	730
703	710	717	724	731
704	711	718	725	732
705	712	719	726	
706	713	720	727	
707	714	721	728	

I would also like to receive manufacturers' booklets on.....

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Name (Please Print).....

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Address:.....

.....11-59

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BUSINESS REPLY CARD
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THE AMERICAN CITY MAGAZINE

470 PARK AVENUE SOUTH

NEW YORK 16, N. Y.

Save time and effort by using these reply cards when you want additional information on any product or service mentioned or advertised in this issue.

Protect against accidents like this!

Use straight Morton Rock Salt—the most effective way to help keep streets, freeways and tollroads safer in winter

Straight Morton Rock Salt does the job abrasives and Salt mixed with abrasives can't do to help prevent accidents caused by ice and snow. Morton Rock Salt gives *abrasive traction* against skidding even before the salt starts to melt the ice. Rock Salt crystals are larger than other commonly used ice melting chemicals and *penetrate ice deeper* with a corkscrew action—not just melt surface ice. Due to Rock Salt's better penetration, it reaches the pavement fast and quickly *melts* the bond between ice and the street surface.

Morton Rock Salt is safe, clean, economical

Straight Morton Rock Salt is non-toxic. It does not damage animals' paws, rubber, fabrics, leather, asphalt, brick or properly seasoned concrete. It will not clog sewers or leave a rutted, dirty pavement as will sand or cinders. What's more, Rock Salt melts *more ice at lower cost* at any temperature above 8° F. than any other commonly used ice melting chemical.

Send for more information today!

☐ Please send me your free book on ice and snow removal.

☐ I would like a Morton representative to advise me on how best to stockpile Morton Rock Salt.

Name_____

Title_____

Address_____

City_____ Zone____ State_____

MORTON SALT COMPANY

INDUSTRIAL DIVISION

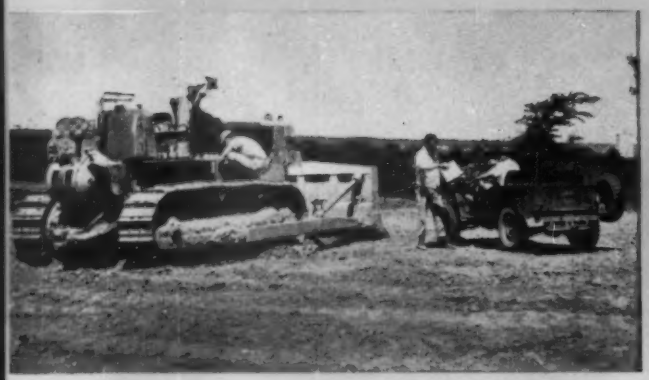
Dept. AC-11 *110 No. Wacker Drive, Chicago 6, Illinois*

SPECIAL REPORT TO CATERPILLAR OWNERS

CAT CATERPILLAR

Parts you can trust.
Dependable round-the-clock service.

CATERPILLAR PARTS ASSEMBLY EXCHANGES LET YOU
TRADE DOWN TIME FOR MORE GO TIME



Here's news about the time-saving, money-saving plan offered by your Caterpillar Dealer. It works this way:

1. Place your order for a parts exchange assembly that is available from dealer stock.
2. Remove your worn assembly and install the reconditioned unit.
3. Send your machine back to work and return the worn unit for credit.

Do-it-yourself repairs to parts assemblies must be weighed against earning losses. What would your equipment earn for you *during the extra time* it takes to repair parts assemblies? You can eliminate earning losses of this type and still pay no premium. Your equipment can actually be making money for you, when otherwise it would be down.

Cat assembly exchange units are guaranteed by your Caterpillar Dealer and can be ready to go on just as soon as the worn assembly is off. The cost? The cost compares favorably with the actual cost had you done the repair work yourself—often less because of the availability of special equipment and serviceman's skill in your dealer's shops.

You can exchange with confidence. When you purchase a Caterpillar Exchange Assembly, you can be sure it's been reconditioned by trained experts using authorized techniques, and only *genuine* Caterpillar parts are used. Every assembly exchange item is backed 100% to be in first-class condition.

Any way you look at it, Cat Parts Assembly Exchange is a good deal. You get a dependable, guaranteed exchange unit at approximately the same cost had you done the job yourself—and the time saved can be converted into cash by having your machine working and earning. Contact your dealer today for his list of Parts Assembly Exchange Units and prices.

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

EQUIPMENT RENTAL AVERAGES DURING 1958*
as compiled by Associated Equipment Distributors

CRAWLERS	PER DAY DIRECT DRIVE	PER DAY TORQUE CONVERTER
D9	$296.00	$386.00
D9 w/No. 9A Dozer	367.00	457.00
D9 w/No. 491 Scraper	497.00	507.00
D8	211.00	330.00
D8 w/No. 8A Dozer	270.75	398.25
D8 w/No. 463 Scraper	366.00	485.00
D7	142.00	
D7 w/No. 7A Dozer	188.25	
D7 w/No. 435 Scraper	265.00	
D6	107.00	
D6 w/No. 6A Dozer	148.50	
D6 w/No. 60 Scraper	179.75	
D4	74.75	
D4 w/No. 4A Dozer	109.50	
D4 w/No. 40 Scraper	113.40	

MOTOR GRADERS	PER DAY
No. 14	$138.00
No. 14 w/Scarifier Attach.	149.00
No. 12	117.00
No. 12 w/Scarifier Attach.	125.75
No. 112	93.00
No. 112 w/Scarifier Attach.	110.85
WHEEL TRACTORS w/2-WHEEL SCRAPER	
DW21-No. 470	$382.00
DW20-No. 456	482.00
DW15-No. 428	205.00
TRACTOR LOADERS, FRONT END LOAD and DUMP	
No. 977	$199.00
No. 955	108.00
No. 933	85.75

*Figures are national average rates and in no way reflect the going rate in any area, and cannot be so used. Actual rental costs vary depending on local practices and conditions.

SERVICE TIP

BEFORE you begin to tear down your equipment to remove a parts assembly, check with your Caterpillar Dealer on availability and delivery. The big advantage of Parts Assembly Exchange is in having the reconditioned unit ready to go on as soon as the worn one is off.

CATERPILLAR

Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

MONEY SAVING *catalogs*

Write directly to the address given or use the Post Card on page 55.

New Line of Snow Removal Trucks

548 Models ranging from 26,000 to 55,000 pounds GVW, designed to fit V-type, one-way blades and rotaries, and offered with both single and double reduction axles are introduced in "40 New Special Snowplow Models," a new, illustrated brochure available from FWD CORP., CLINTONVILLE, WIS. The trucks can be used year 'round for hauling, grading, powering other units or as rugged derrick units.

Water Wells and Pumps

549 *Bulletin* No. 27 gives valuable information on water wells and pumps designed to meet economically and dependably the varied and vital requirements of municipal water systems. For a copy, write LAYNE & BOWLER, MEMPHIS 8, TENN.

Radial-Type Air Compressors

550 A 4-page brochure, well-illustrated with on-the-job photos, gives specifications and construction features for three compact, portable air compressors (Model 55, 80, 125), driven by Wisconsin 4-cylinder air-cooled engines and designed to power numerous street maintenance and construction tools. Write P. K. LINDSAY, 97 TILESTON, EVERETT 49, MASS.

Shock-Free Wind Up Starter

551 A report from BRIGGS & STRATTON, MILWAUKEE, WIS., announcing the company's new engine wind-up starter, emphasizes that the unit is free from shock load and capable of storing a great reserve of energy to assure quick engine starts and that it is designed for safe operation. The starter will be available on B&S vertical shaft models up to 3 hp.

Dewater Sludge by Centrifugal Force

552 A 4-page illustrated brochure, which explains how effective, economical dewatering of sewage sludge can be accomplished through use of continuous Bird Centrifuges, touches on the experience of small and large municipal sewage plants using this equipment. For a copy, write BIRD MACHINE CO., SOUTH WALPOLE, MASS.

4-Yard Capacity Street Sweeper

553 The latest specification sheet on the Model 1000-4 Mobil Sweeper includes a check list of 12 improved operating features that yield real performance values. For a copy, write MOBIL SWEEPER, DIVISION OF THE CONVEYOR CO., 3260 E. SLAUSON AVE., LOS ANGELES 58, CALIF.

Turbine Type Pumps

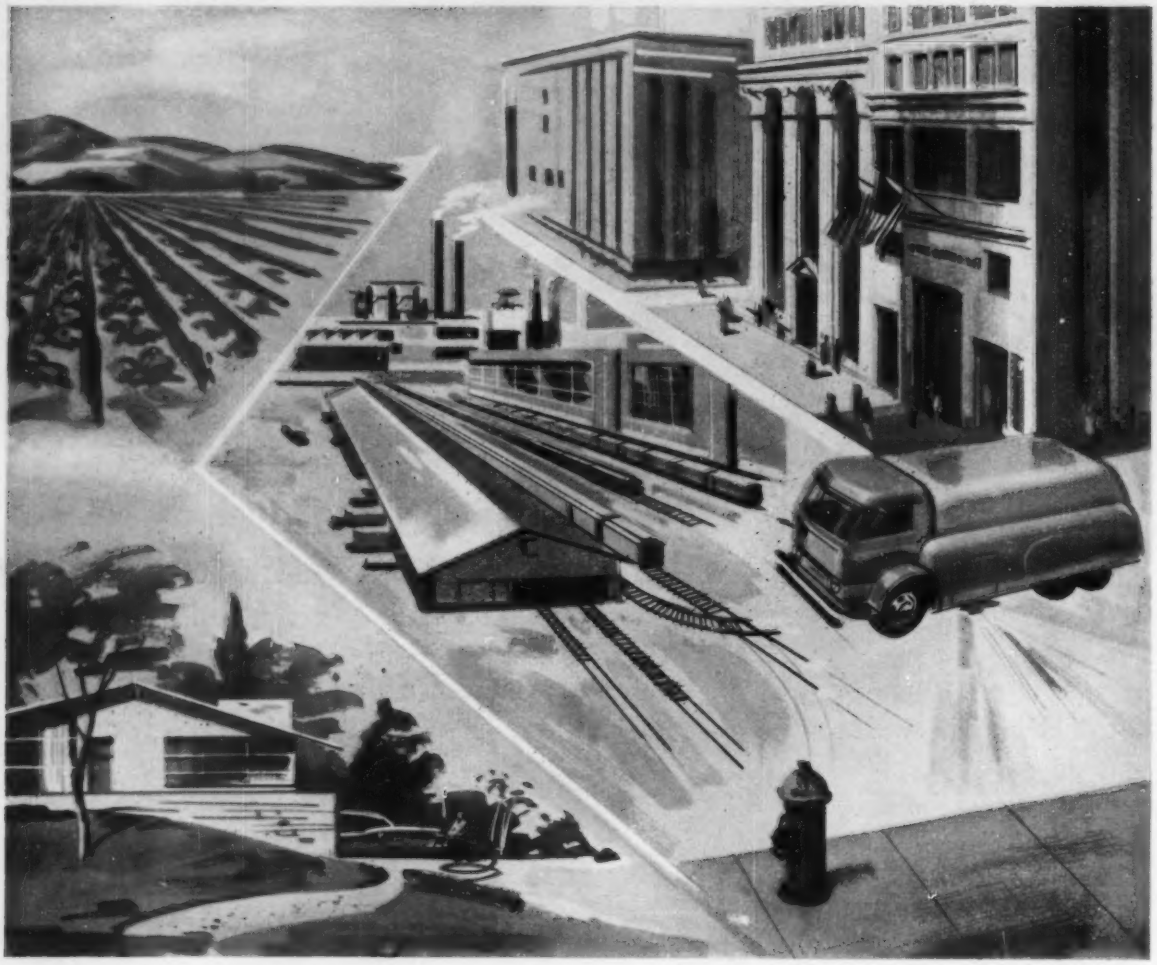
554 *Bulletin* S-11 illustrates and describes the latest design features of these new Apco pumps, which are suited for boiler feed, condensate return, water process treatment and booster service. The pumps are reported to have a capacity up to 150 gpm, able to withstand pressures to 300 psi and temperatures to 275°F. For a copy, write AURORA PUMP DIVISION, THE NEW YORK AIR BRAKE CO., LOUCKS ST., AURORA, ILL.

(See page 61 for more Bulletins)

have you tried the GURLEY optical plummet transits?

Two Gurley transits now feature built-in Optical Plummets to eliminate plumb bobs ...save set-up time ...improve accuracy. The Optical Plummets will focus on distant objects, such as encountered in bridge or building construction—or as close as 12 inches for setting over a point. Built-in shifting head allows 2-inch shift over a point, giving ample leeway in initial set-up. Write for Bulletin OP-100.

W. & L. E. GURLEY
527 Fulton Street Troy, N. Y.



Lock Joint serves your community best

... IN THE HOME

INDUSTRY

AGRICULTURE

FIRE PROTECTION

SANITATION

An adequate supply of water, and an efficient means of disposing of excess water and wastes, are two of the most vital necessities to the comfort, health and growth of any community. LOCK JOINT CONCRETE PIPE provides the ideal material for implementing these important services. Dependable, rugged and economical, Lock Joint concrete pressure pipe, and sewer and culvert pipe will give trouble-free service for generations with the very minimum of maintenance requirements.

The large variety of designs available in Lock Joint Concrete Pipe make it possible to select the most economical pipe consistent with the specific requirements of any individual project, whether the pipeline be for water supply, water distribution, drainage, sewage or subaqueous installation.

LOCK JOINT PIPE CO.

East Orange, New Jersey

Sales Offices: Chicago, Ill. • Columbia, S. C. • Denver, Col. • Detroit, Mich. • Hartford, Conn. • Kansas City, Mo. • Perryman, Md. • St. Paul, Minn.

Pressure • Water • Sewer • **REINFORCED CONCRETE PIPE** • Culvert • Subaqueous

FREE catalogs

Write directly to the address given or use the Post Card on page 55.

Submersible Water Pumps

555 *Bulletin* 6000B describes the entire line of McDonald submersibles, now separated into Series A and Series B, the former designating a 115-volt motor and the latter a 230-volt motor. These completely automatic units are available in 12 sizes, ½ through 2 hp, in capacities up to 1220 gph, and for depths to 600 feet. Write A. Y. McDONALD MFG. CO., DUBUQUE, IA.

A Helicopter at Half Price

556 By utilizing the terms of a matching funds plan, which requires a city to pay only half the purchase price, your city can acquire an FAA-approved helicopter for use in traffic control, fire prevention, crime detection, disaster and civil defense work. For full facts, write COMMERCIAL SALES MGR., DEPT. 14K, BELL HELICOPTER CORP., FORT WORTH, TEXAS.

Euclid's New Crawler Tractor

557 Literature announcing the 211-hp Model C-6 reports that (1) its production climaxes nearly 5 years of intensive testing of a pilot group of tractors and that (2) it is completely new in design concept. It then elaborates on each innovation, explaining it in terms of its importance to performance, maintenance, tractor life. For full story, write ADVERTISING DEPT., EUCLID DIVISION, GENERAL MOTORS CORP., CLEVELAND 17, OHIO.

Three Motor Graders

558 The main features of three Caterpillar motor graders—the 150-hp No. 14, the No. 12, with 115 hp, and the 75-hp No. 112—are described in a new 8-page booklet, entitled "Top Performers" (Form No. DE914). For a copy, write CATERPILLAR TRACTOR CO., ADVERTISING DIV., PEORIA, ILL.

Stores Engineering Drawings

559 If you use or store blueprints, tracings, prints or drawings, then you'll want information on low-cost, permanent roll record files that interlock, offer instant access and full protection to any size and type of drawing, as well as providing maximum space utilizaton. For descriptive literature, write HAMILTON MFG. CO., TWO RIVERS, WIS

Mercury Lamps

560 There have been constant improvements in mercury lamps since their initial introduction. To learn of the latest developments, write GENERAL ELECTRIC CO., LARGE LAMP DEPT., C-923, NELA PARK, CLEVELAND 12, OHIO.

What a Photocopy Machine Can Do

561 A new booklet lists 115 ways a photocopy machine can be utilized. They include contracts, inventory records, ledger cards, tax reports, purchase orders, birth and death certificates, title abstracts, deeds. Free copies of "115 Ways" can be obtained from F. G. LUDWIG, INC., 300 COULTER PLACE, OLD SAYBROOK, CONN.

Emergency Power Units

562 Thirty-two carbureted and diesel units ranging from 16.5 to 385 hp that can dependably supply low-cost power for standby pumps, generator sets, or for repowering construction equipment are fully described in literature offered by INTERNATIONAL HARVESTER CO., 180 NORTH MICHIGAN AVE., CHICAGO 1, ILL.

Portable Space Heater

563 Multipurpose, radiant and recirculating, the LPG200 is engineered for sootless production of high volume heat (200,000 BTU's). Only 45 pounds, it can be moved around the job easily, to warm workers, thaw out machinery, cure concrete, dry mortar and plaster. For additional information, write STOW MFG. CO., 192 SHEAR ST., BINGHAMTON, N. Y.

One-Man Chain Saws

564 *Bulletin* L-1916 describes a complete line of one-man operated chain saws and practical attachments that substantially contribute to achieving low-cost land clearing. For your copy, write HOMELITE, A DIVISION OF TEXTRON, INC., 110 RIVERDALE AVE., PORT CHESTER, N. Y.

All-Weather Tennis Courts

565 In addition to year-round usability, these tennis courts boast sound multiple-layer construction, universal player acceptance, minimum maintenance. They are competitively priced. For details and a copy of "Laykold Tennis Courts," write AMERICAN BITUMULS & ASPHALT CO., 320 MARKET ST., SAN FRANCISCO 20, CALIF.

(See page 62 for more Bulletins)

When it comes to your bucket jobs come to O'Brien *!*

See the all-power Sewerking® BUCKET MACHINE for 1960!

READY NOW—the revolutionary Bucket Cleaner that completely removes sand, big roots and other heavy sewer obstructions as never before! Built extra heavy, strong and safe—important automatic features for easy operation—greater power, pull and capacity to clean more sewer at lower cost!

ASK FOR INFORMATION ON THE NEW SEWERKING BUCKET DUMPER

WRITE, WIRE OR PHONE TODAY FOR FULL INFORMATION —without obligation!

AVAILABLE IN 9-16-25 HP.

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O'Brien **MANUFACTURING CORPORATION**
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THE V·NOTCH MEETS FUTURE DEMANDS, TOO

They tell us it's a growing America.

It is.

You know already you'll need to expand to keep pace with demand.

That's why the V-notch Chlorinator has such tremendous range. The precision shaped groove in a V-notch plug is made to control chlorine completely to one eight-hundredth of the maximum capacity of your machine. In fact, this is standard in some of the V-notch chlorinators.

Your W&T representative will help you size your V-notch chlorinator so that when your treatment needs step up—you simply snap in the next size rotameter.

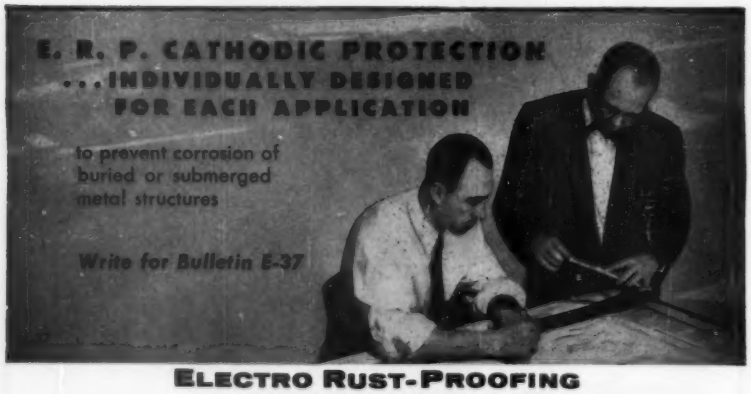
Without buying a new machine, you get the same quick, accurate control in a new working feed range.

And, of course, the right plastics make the whole chlorinator chlorine-proof.

A booklet, "The V-notch Story" will tell you about all the W&T V-notch Chlorinator features. For your copy write Dept. S-133.00

WALLACE & TIERNAN INCORPORATED

25 MAIN STREET, BELLEVILLE 9, NEW JERSEY



ELECTRO RUST-PROOFING
CORPORATION
30 MAIN STREET, BELLEVILLE 9, N. J.

FREE catalogs

Write directly to the address given or use the Post Card on page 55.

Accurately Feeds Dry Chemicals by Weight

566 Now you can obtain catalog data on an electronically controlled diminishing batch weigh feeder machine, designed for accurate and continuous feeding of dry chemicals in water and sewage treatment plants at a desired, predetermined rate from 3 to 300 pounds per hour. Write SYNTRON CO., 430 LEXINGTON AVE., HOMER CITY, PA.

Street Lighting Standards

567 For up-to-date information on a complete line of octagon-shaped steel and aluminum street lighting standards of trim design and desirable engineering, write DEPT. A-11, KERRIGAN IRON WORKS CO., SUBSIDIARY OF ROCKWELL-STANDARD CORP., NASHVILLE, TENN.

Municipal Finance

568 Requisite to orderly and efficient community growth is a firm financial base. To establish this at high-level efficiency demands the knowledge and technical skill that can be supplied only by an experienced fiscal agent. "Present Day Banking Services" will acquaint you with such an agent and its services. For a copy, write ALAN K. BROWNE, VICE PRES., MUNICIPAL BOND DEPT., BANK OF AMERICA, 300 MONTGOMERY ST., SAN FRANCISCO 20, CALIF.

Water Treatment Equipment

569 *Bulletin* 9141 will familiarize you with a variety of water treatment equipment and methods that provide maximum scope in designing to meet individual needs. For a copy, write DORR-OLIVER INC., STAMFORD, CONN.

Rotary and Reel Type Mowers

570 A full-line catalog describes these mowers, which vary in width of cut from 18" to 26", are equipped with 4-cycle Briggs & Stratton engines rated at 3600 rpm, and are designed and built to meet the needs of municipal green areas both large and small. For a copy, write THE ECLIPSE LAWN MOWER CO., DIV. OF BUFFALO-ECLIPSE CORP., 298 RAILROAD ST., PROPHETSTOWN, ILL.

Silencers for Diesel, Gas Engines

571 Designed to do the job of both boiler and silencer, these units operate wet or dry, conserve valuable space, minimize back pressure. They are available in both horizontal and vertical models for a wide range of conditions and capacities. For full facts, write EMHART MFG. CO., MAXIM DIV., BOX 216, HARTFORD 1, CONN.

Small Vibrator Compactor Equals 10-ton Roller

572 This self-propelled, one-man operated, 236-pound unit, designated C-12 by MASTER VIBRATOR CO., 1752 STANLEY AVE., DAYTON, OHIO, compacts granular soil, sand, gravel, rock or asphalt, and is said to produce 90-100% standard Proctor density at optimum moisture. It uses about 2 gallons of gas during 8 continuous hours of operation and works close to abutments.

(See page 64 for more Bulletins)

MASSEY-FERGUSON MULTI-PURPOSE TRACTOR SHOVEL

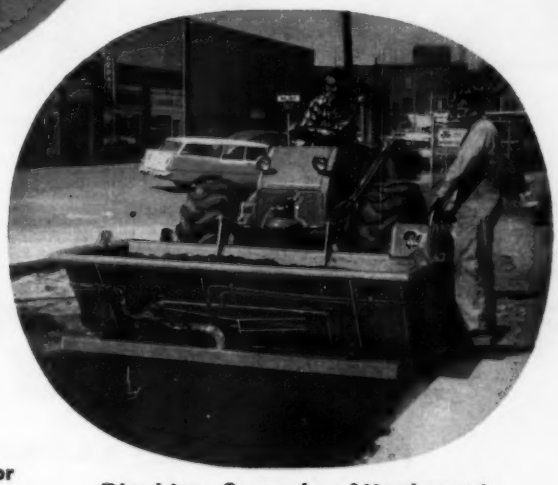
WHIPS "STICKY" EQUIPMENT BUDGETS

1 TRACTOR

10 *ATTACHMENTS*

Pick-Up Street Sweeper Attachment on Massey-Ferguson 1001

has complete hydraulic control with ¾-cubic-yard dust pan. Dumps directly into truck. Has 63" Palmyra fibre rotary broom and wire steel gutter brush and sprinkler system.



Blacktop Spreader Attachment

spreads up to 8-foot widths with two-cubic-yard hopper capacity. Has adjustable feed, width, and thickness control. Handles hot or cold mix. Independently powered . . . complete hydraulic control.

Massey-Ferguson's 1001 Tractor Shovel reduces your equipment investment . . . cuts idle time of men and machines . . . outperforms expensive, single-purpose equipment. **Ten specially designed, integrated attachments** include pick-up street sweeper, blacktop spreader, snow loader, Davis Backhoe angle dozer, fork lift, crane rotary broom and scarifier. Loader bucket has 1-cubic-yard (payload) capacity. See how Massey-Ferguson's **INSTANT REVERSING** lets you change directions at a touch of your toe — no shifting . . . no clutching . . . no levers to pull. Compare other important features . . . quality and performance, and you'll see why this is the best Shovel Loader **buy for your money!**

Why Wait? Set a Date — We'll Demonstrate!

MASSEY-FERGUSON INDUSTRIAL DIVISION

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THE TOP OF ITS CLASS

T-16 OPTICAL TRANSIT

In any comparison of optical and mechanical precision, features and versatility, three characteristics of this repeating transit become immediately evident:

The Wild T-16 is faster, more accurate, and much easier to work with than any other instrument in its price class.

This is the consensus of engineers and surveyors in mining, highway and land surveying functions throughout the world.

Your own evaluation, cordially invited, will quickly prove these facts. Write for the WILD Bulletin T-16.

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MONEY SAVING *catalogs*

Write directly to the address given or use the Post Card on page 55.

Cuts Water, Gas Pipe Automatically

573 Without shutting off the flow of water or gas, the CL-12 drills into mains to make new connections and to add valves while the main is under pressure. A check of the visual indicator shows how the automatic cut is progressing. The CL-12 is designed for cuts from 2" to 12". For details, write MUELLER CO., DECATUR, ILL.

Long-Wearing, Clean-Sweeping Mechanical Street Sweeper Brooms

574 Illustrated literature reports that "one Danline outwears 15 fibre brooms" and that it can remove up to 10" of sand in a single pass—and even handle heavy loads of dirt, snow or gravel. For complete information on these new, round wire street sweeper brushes, write NEWARK BRUSH CO., 260 MICHIGAN AVE., KENILWORTH, N. Y.

Efficient Compressor for Hand-Held Tools

575 The 125 is one in a line of dependable portable and stationary air compressors discussed in literature, available from GORDON SMITH & CO., 525 COLLEGE ST., BOWLING GREEN, KY. It operates on a 6-cylinder instant-starting Hercules Industrial engine (3 for power, 3 for compression) and will satisfactorily power two 85-pound paving breakers simultaneously.

Cuts Cost of Installing Pipe Underground

576 The time-saving tools discussed in new literature offered by GREENLEE TOOL CO., 1780 COLUMBIA AVE., ROCKFORD, ILL., are hydraulic pipe pushers. Model No. 790, with power pump, pushes ¾"-4" pipe about 2 feet per minute; Model No. 795 is for pipe over 4", concrete sewer and corrugated ducts. Both eliminate costly tearing up, tunnelling, filling and repaving.

Ice Control Information

577 There are many ways to combat ice and snow and to keep pavements bare and safe in winter. One way is to use calcium chloride, alone or mixed with salt. For details and facts on ice control, write SOLVAY PROCESS DIVISION, ALLIED CHEMICAL, 61 BROADWAY, NEW YORK 6, N. Y.

Reflectorized Pavement Markings

578 If you would like to be brought up to date on a complete line of reflectorized traffic markings—beads, coatings, striping—that have proved themselves by their records of reduced night time traffic fatalities and longer marking life, write CATAPHOTE CORP., TOLEDO 10, OHIO.

Help with Outdoor Lighting Problems

579 Trying to arrive at an economical yet sound solution to your outdoor lighting problems? Then you will probably want to know more about the kinds of lighting equipment available. You can obtain such information from a qualified staff of lighting engineers by writing to LINE MATERIAL INDUSTRIES, OUTDOOR LIGHTING DIVISION, MILWAUKEE 1, WIS.

(See page 66 for more Bulletins)

Chicago

Congress Expressway Project Sewer Lines made WATERTIGHT with PRESS-SEAL!

Approximately 11,000 feet of 60″ to 72″ concrete sewer pipes were fitted with Press-Seal rubber gaskets to provide the Windy City with permanently water-tight sewer lines along the Congress Expressway.

Press-Seal *confined compression type* gaskets are fitted quickly to the ends of concrete pipe sections before they are laid. Installation is fast and accurate, providing permanent protection against leakage in all types of soil.

Press-Seal gaskets are vulcanized from a special high quality Goodyear compound that lasts as long as the concrete pipes they seal. Savings on installation time and cost are substantial.

Detailed engineering data on request. Send, if you wish, information about your special problems. Suggestions will be sent at no cost to you. Write today.

Contractor: Kenny Construction Company, Skokie, Illinois.

Construction Engineer: District 1, State of Illinois, Mr. McGowan.

Pipe supplied by American Marietta Co., Concrete Products Division, Hodgkins, Illinois.

PRESS-SEAL

- **Prevents Infiltration**
- **Speeds Installation**
- **Stops Root Problems**
- **Cuts Installation Costs**
- **Reduces Accidents**
- **Permits Pipe-line Contraction and Expansion**

Available in different types of gasket material for every sewerage purpose: Buna-N for Oil Content Sewage, Neoprene for Acid Content Sewage, Natural Rubber for Common Sewage.

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OFFICE AND PLANT: P. O. BOX 482, R.R. 6, COVINGTON RD.

FORT WAYNE, INDIANA • Phone Kenmore 5213

PRESS-SEAL GASKET OF CALIFORNIA—P.O. BOX 3054, SANTA BARBARA, CALIFORNIA

PRESS-SEAL GASKET CORPORATION OF CANADA—KITCHENER, ONTARIO

FREE catalogs

Write directly to the address given or use the Post Card on page 55.

Surveyor's Transit

580 Superior optics and precision fashioning are factors that contribute much to the ease of use and performance excellence of the Paragon transit, which sights clearly and sharply, with less eye strain, and stays true even under the most demanding field conditions. For full facts write KEUFFEL & ESSER CO., DEPT. AC-7, HOBOKEN, N. J.

Tax Equalization Appraisals

581 Cole-Layer-Trumble offers a quarter century of experience in producing high quality appraisals for local tax equalization purposes. For descriptive brochure, write COLE-LAYER-TRUMBLE CO., 11 W. MONUMENT AVE., DAYTON 2, OHIO.

Snow Plows—Reversible-One-Way, V, Rigid

582 These rugged, heavy-duty plows that perform smoothly and efficiently under the most adverse snow removal conditions provide safe, speedy snow removal on streets, roads, highways, parking lots and airports. They are thoroughly described in literature available from GOOD ROADS MACHINERY CORP., MINERVA, OHIO.

Only the NEW DIETZ

REVOLVING LIGHT gives you all these advantages

- Greater lens area—complete 360° visibility over greater distances
- Lower height—only 8¾ inches
- Frequency beam can be 30, 60, 90 or 120 per minute according to number of sealed beam bulbs installed—one, two, three or four respectively
- Dome lens easy to remove—only necessary to remove one brass bolt
- Rust-proof chrome-plated brass base and lens rim mounts on thick rubber pad—conforms to contour of car roof
- Shock-resistant lucite dome available in red, amber, blue or clear.

Go DIETZ and you go Safely

Write for complete details

R. E. DIETZ COMPANY, 225 Wilkinson St. Syracuse 1, New York

Ice Control Equipment

583 *Bulletin* A-408-B illustrates and describes those construction features of the Baughman salt, sand and cinder spreaders that assure long life, low cost performance and operating efficiency. For a copy, write BAUGHMAN MFG. CO., 216 SHIPMAN RD., JERSEYVILLE, ILL.

Detects Voids, Pinholes, Breaks, Scratches in Pipe

584 Pipeliners requiring a dependable, fully-portable, general purpose electrical inspection instrument will be interested in explanatory literature on the E/4 shoulder holiday inspector and the E/P pulse-type detector for damp climates. Both can be used for a full day without battery recharging. Write TINKER & RASOR, 417 AGOSTINO RD., P. O. BOX 281, SAN GABRIEL, CALIF.

Kills Flies, Mosquitoes, Combats Dutch Elm Disease

585 The new Buffalo Turbine catalog tells the complete story of a sprayer-duster that deals quick death to insects by turbo-spraying liquids for larviciding and turbo-dusting for adult insect control. Able to dispense liquid or dust separately or simultaneously, it carries to the tops of tallest trees and penetrates thickest brush. Write BUFFALO TURBINE AGRICULTURAL EQUIPMENT CO., INC., 69 INDUSTRIAL ST., GOWANDA, N. Y.

Trailer-Load Heavy Equipment Quickly, Safely

586 A big, new semi-tilt trailer featuring an extra-low, completely flat, over-the-wheels platform has been announced by MILLER TILT-TOP TRAILER, INC., 460 S. 92nd ST., MILWAUKEE 14, WIS. It has been designated the OTS and is designed to permit faster, safer loading of large construction equipment up to 44,000 pounds gross weight.

Protect Winter Sand Supplies

587 One way to prevent sand waste and improve sanding efficiency this winter is to cover your oil drum sand containers with Flat Tops. These steel covers securely fit any 55-gallon oil drum. They will protect sand from rain, sleet, snow; shut out rubbish, keep sand clean and free-flowing for efficient spreading on icy streets and highways. For full facts, write THE F. H. LAWSON CO., CINCINNATI 4, OHIO.

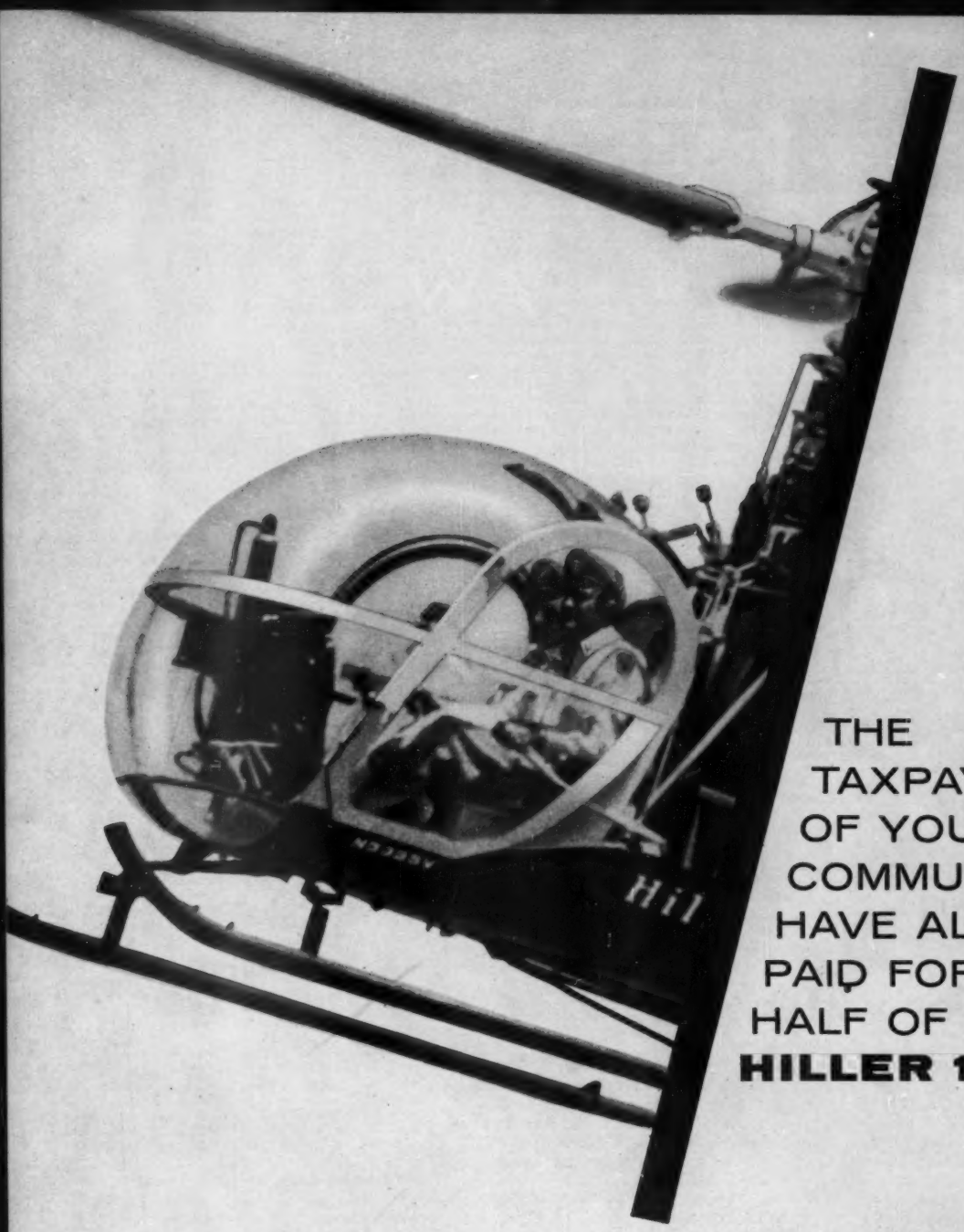
One-Step Photocopier Speeds Municipal Office Routine

588 Interested in speeding up municipal office routine and reducing costs? Then you'll want to see the Uni-Matic Auto-Stat in action. Lightning fast and simple to operate, this one-step, all-purpose photocopier makes crisp reproductions from any original in any color. Its many applications are explained in a booklet available from AMERICAN PHOTOCOPY EQUIPMENT CO., DEPT. AC-59, 2100 W. DEMPSTER ST., EVANSTON, ILL.

New Cold-Flow Thermoplastic Pavement Marking

589 *Bulletin* PX56 shows the numerous uses of Plastix "SD," reflectorized permanent-type pavement marker with improved tensile strength and non-buckling flexibility. Available in reels, strips, blocks or pre-cut legends, it molds to the pavement contour immediately, becoming an integral part of the surface through traffic pressure. For a copy, write PRISMO SAFETY CORP., HUNTINGDON, PA.

(See page 68 for more Bulletins)



THE TAXPAYERS OF YOUR COMMUNITY HAVE ALREADY PAID FOR HALF OF A **HILLER 12 E**

THE OTHER HALF IS A LASTING INVESTMENT IN CIVIL PROTECTION AND PREPAREDNESS

No other vehicle can equal the helicopter for versatility...for fly anywhere, ***land anywhere*** *ability. That's why the Office of Civil and Defense Mobilization will match your community's funds toward the purchase price of the Hiller 12 E —* ***the most powerful light utility helicopter available under the matching funds program.*** *Your community can qualify — the OCDM is ready to help — the decision is up to you.*

Free, *our new brochure, "America's New Mounted Police," describes established community helicopter practices, OCDM procedures, the Hiller 12 E and its emergency accessories available under the matching funds program, plus Hiller services, including free demonstrations for officials of states and their subdivisions. Write today, Commercial Division,*

HILLER AIRCRAFT CORPORATION PALO ALTO, CALIFORNIA

FREE catalogs

Write directly to the address given or use the Post Card on page 55.

Improved Sewer Cleaning Equipment

590 Designed to remove deposits of sand, silt, roots and other heavy obstructions from sewers, this Sewerking bucket machine is completely power-operated and has many automatic control features. It is offered in 9, 16 and 25 hp. For full story, which tells of its many engineering advancements, write O'BRIEN MFG. CORP., 5632 NORTHWEST H'WAY., CHICAGO 46, ILL.

Vertical Solid and Hollow Shaft Motors

591 New high-speed squirrel cage induction vertical motors in all types of enclosures, offered in 150 hp and up, in frames 584 and larger, and especially suited to unattended, intermittent duty installations, are described in detail in literature available from THE IDEAL ELECTRIC AND MANUFACTURING CO., MANSFIELD 15, OHIO.

Brush Disposal Literature

592 Articles which describe five methods of brush disposal and ten new ways to utilize brush chips can be obtained from FITCHBURG ENGINEERING CORP., DEPT. AC-119, FITCHBURG, MASS., manufacturer of the well-engineered Fitchburg chipper that turns brush into easy-to-dispose of chips at low cost.

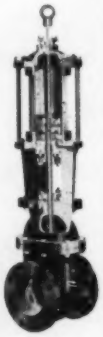
A CUP OF WATER

""Tis a little thing," the poet says, "to give a cup of water." Yet water, an absolute necessity even in the most primitive society, has had to be rationed in over 1,000 prosperous U. S. communities in the past 5 years. Rainfall has been normal. But water use has increased much faster than improvements in water distribution facilities. Suburban development means more footage of water main per customer.

Some 60% of the water utilities in prosperous U. S. need major improvements now in their distribution systems. For the next 20 year period the U. S. Department of Commerce estimates water works and sewerage works construction requirements at over $41 billion, which is about equal to the total estimated replacement value of existing facilities. This will require construction expenditures at approximately double the current rate.

So, "to give a cup of water" in these modern times has ceased to be a little thing. Your water works superintendent knows the technical side of the problem. But he needs the moral support of his water consumers.

This series is an attempt to put into words some appreciation of the water works men of the United States.



M&H VALVE
AND FITTINGS COMPANY
ANNISTON ALABAMA
SUBSIDIARY OF W WALWORTH

Clamp-on Traffic Sign Faces

593 These reflectorized traffic-sign faces "EZ-ON" right over present signs. They are made in 24" and 30" sizes, and are available in octagon or diamond shape, and in yellow and black or red and white. Lower in both initial and maintenance cost than ordinary signs, they meet every traffic need. For descriptive booklet and prices, write GRACE SIGN & MFG. CO., 3601 SOUTH 2nd ST., ST LOUIS 18, MO.

Water-free, Dust-free Street Sweeping

594 . . . will be routine with a Tennant Model 100 vacuumized sweeper on the job. For its powerful broom and vacuum system picks up fine dust and dirt as well as heavy, bulky debris, whether operating in downtown areas, on parking lots or dusty alleys. For details on this trimly compact sweeper, which boasts a new type of main broom, write G. H. TENNANT CO., 951L N. LILAC DRIVE, MINNEAPOLIS 22, MINN.

Mobile Asphalt Plant Handles All Types of Aggregate

595 Designed especially for use by small municipalities, this compact, easy-to-handle Patch-Mix plant produces all types of hot mixes as well as cold mix. A descriptive brochure points out that it has many big plant features—rotary dryer, built-in asphalt tank, pugmill, volumetric metering system. For details on the PM-310, write WYLIE MFG. CO., INC., P. O. BOX 7086, OKLAHOMA CITY 12, OKLA.

Your Water Supply Program— How to Win Support for It

596 The water works official seeking to gain public understanding and backing for a water supply program will find that the "Water Utility Executive's Community Portfolio" offers practical suggestions on techniques and methods that can be used to successfully tell his story. For a copy, write CAST IRON RESEARCH ASSN., THOMAS F. WOLFE, MANAGING DIR., 3440 PRUDENTIAL PLAZA, CHICAGO 1, ILL.

Trims Lawn Problems

597 Lawns get trimmed fast and efficiently with the Wonder-Boy 575 riding mower. Operating at a 1¾ acre per hour clip, the 32" rotary with 2 speeds forward and reverse can trim close to obstructions, turn within a 4½-foot radius. To the user, it offers 33% more cutting capacity, 44% more horsepower than previous models. For literature, write SIMPLICITY MFG. CO., 5951 SPRING ST., PORT WASHINGTON, WIS.

All-Purpose Body for 1-Ton Trucks

598 This utility body is actually a smaller version of the well-known Leland "Packaged Unit," used successfully by construction and utility crews. It has been designed specifically for use on jobs that are too heavy to handle by hand and too light to handle with 1½-ton and 2-ton trucks. For full facts and specifications, write LELAND EQUIPMENT CO., 408 N. MAIN, TULSA, OKLA.

Submersible Water Pumps

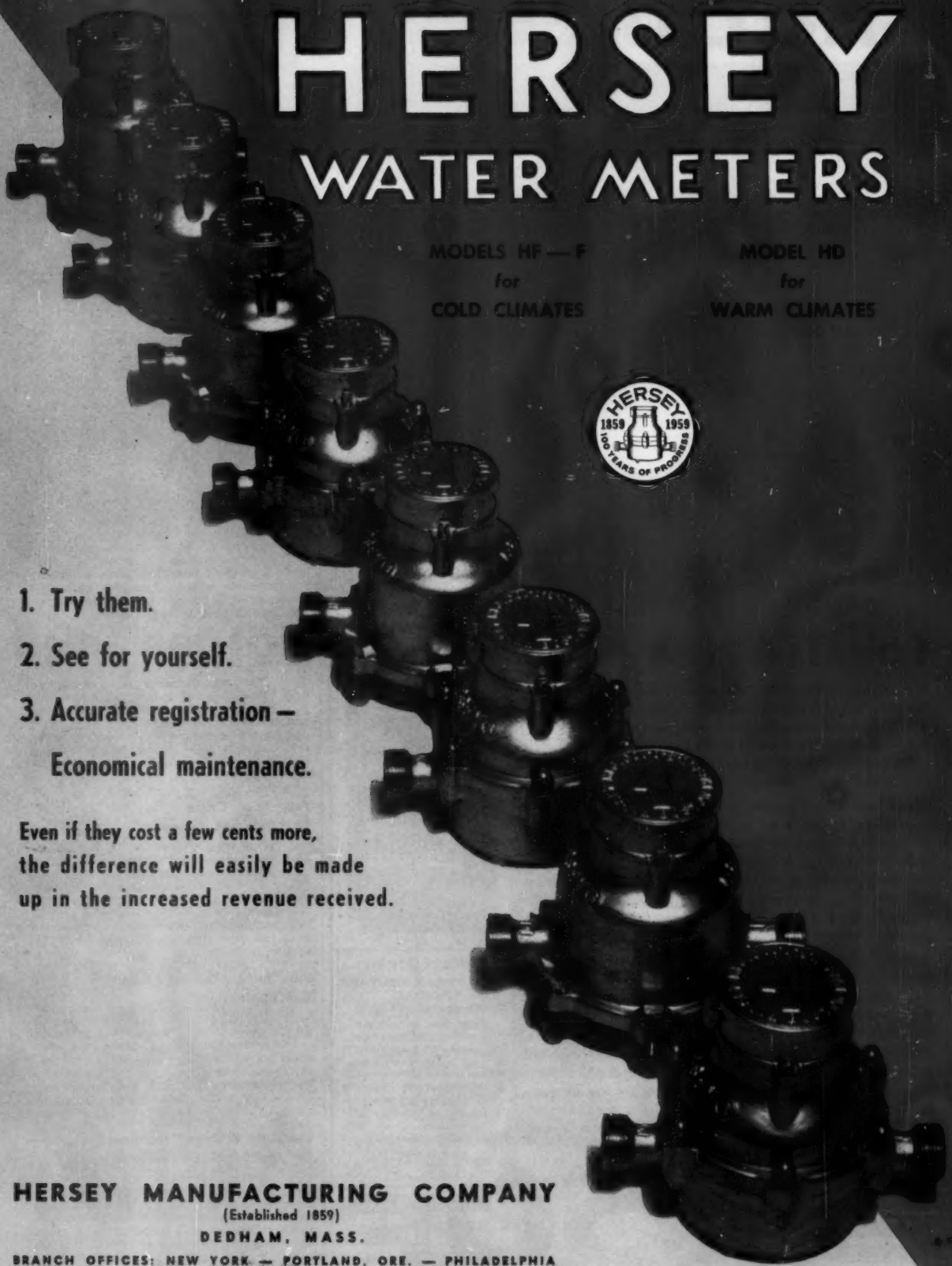
599 *Bulletin* B-1300 explains the advantages of these pumps for deep well and booster installations and for services such as fire fighting and sprinkler systems. The 3550 rpm medium capacity is recommended for wells 6" and larger; the 1750 rpm high capacity, for 12" wells and larger. Another, of new design, for 4" and larger wells, is described in *Bulletin* B-259. Write SUMO PUMPS, INC., BROWN HOUSE RD., STAMFORD, CONN.

(See page 70 for more Bulletins)

HERSEY
WATER METERS

MODELS HF — F
for
COLD CLIMATES

MODEL HD
for
WARM CLIMATES



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for better elections

The Shoup Voting Machine is accurate, fool-proof and tamper-proof. Its mechanical perfection, and the ease with which the total vote for each candidate can be transcribed from the face of the machine always insures a completely accurate count. Its locking devices provide maximum protection against fraud. No error in the results is possible.

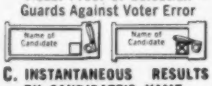
These built-in safeguards, as well as the exacting production standards which are maintained throughout every step in the manufacture of Shoup Voting Machines, have produced this unsurpassed performance record: every machine ever delivered by Shoup is still giving completely satisfactory service . . . there is no record of a vote tabulation ever being changed on re-check in an election where Shoup machines were used.

Shoup Voting Machines are designed to fill every ballot requirement and comply with the election laws of all states. They are the only voting machines that duplicate the traditional vertical paper ballot with which voters are familiar. They are fool-proof and fraud-proof, reduce voting costs, and insure greater speed and accuracy of results. Impartial surveys prove the Shoup Voting Machine superior . . . more perfectly designed and constructed to meet the requirements of the voting public. That's why more and more communities, from the smallest to the largest, are using Shoup Voting Machines for better elections.

The ABC's of Superiority...

A. THE VERTICAL TYPE BALLOT (see illustration)

B. THE MOVING X MARK – Visual Proof of Selection – Guards Against Voter Error



C. INSTANTANEOUS RESULTS BY CANDIDATE'S NAME Directly on the Face of the Machine No Decoding Necessary

28 States Already Use Shoup Voting Machines

SHOUP

THE SHOUP VOTING MACHINE CORPORATION

EXECUTIVE OFFICES: 41 E. 42nd St., New York 17, N.Y. • SALES OFFICES: 1701 West End Ave., Nashville 3, Tenn.

the voting machine that looks like a ballot

CATALOGS *for Improved Municipal Services*

Write directly to the address given or use the Post Card on page 55.

Controls Traffic at a Profit

600 These rugged, carefully engineered manual parking meters have only six moving parts, give continuous service in all seasons and weather, and can be set for any number of hours and coin combinations. For their complete story and that of a new Security Collection System, write MI-CO PARKING METERS, P. O. BOX 668-AC, COVINGTON, KY.

Smallest, Lightest Portable 2-Way Radio

601 . . . is the way illustrated literature describes the 8-watt output transistorized Motorola "Handie-Talkie," recommended for its reliability and as an aid to faster fire fighting. For details MOTOROLA COMMUNICATIONS & ELECTRONICS, INC., 4501 AUGUSTA BLVD., CHICAGO 51, ILL.

Improved Fire Hydrant

602 The Mathews fire hydrant is so designed that in case of accident its barrel can be quickly replaced without excavating. Its head revolves 360° and its stuffing box plate, cast integrally with nozzle section, provides leakproof construction. Its operating thread operates free of rust, sediment and ice.

Water Meters for Extreme Climates

603 The manufacturer of a complete line of water measuring equipment designed for accurate registration and economical maintenance has published descriptive literature on water meters for cold (Models HF—F) and warm (Model HD) climates. For copies, write HERSEY MFG. CO., DEDHAM, MASS.

Are Your City's Fire Defenses Adequate?

604 One way to find out is to take advantage of the free survey offer being made by THE GAMEWELL CO., 1270 CHESTNUT ST., NEWTON UPPER FALLS 64, MASS. Your city's existing fire defenses will be analyzed and, if necessary, recommendations will be made that can give your community the protection it needs.

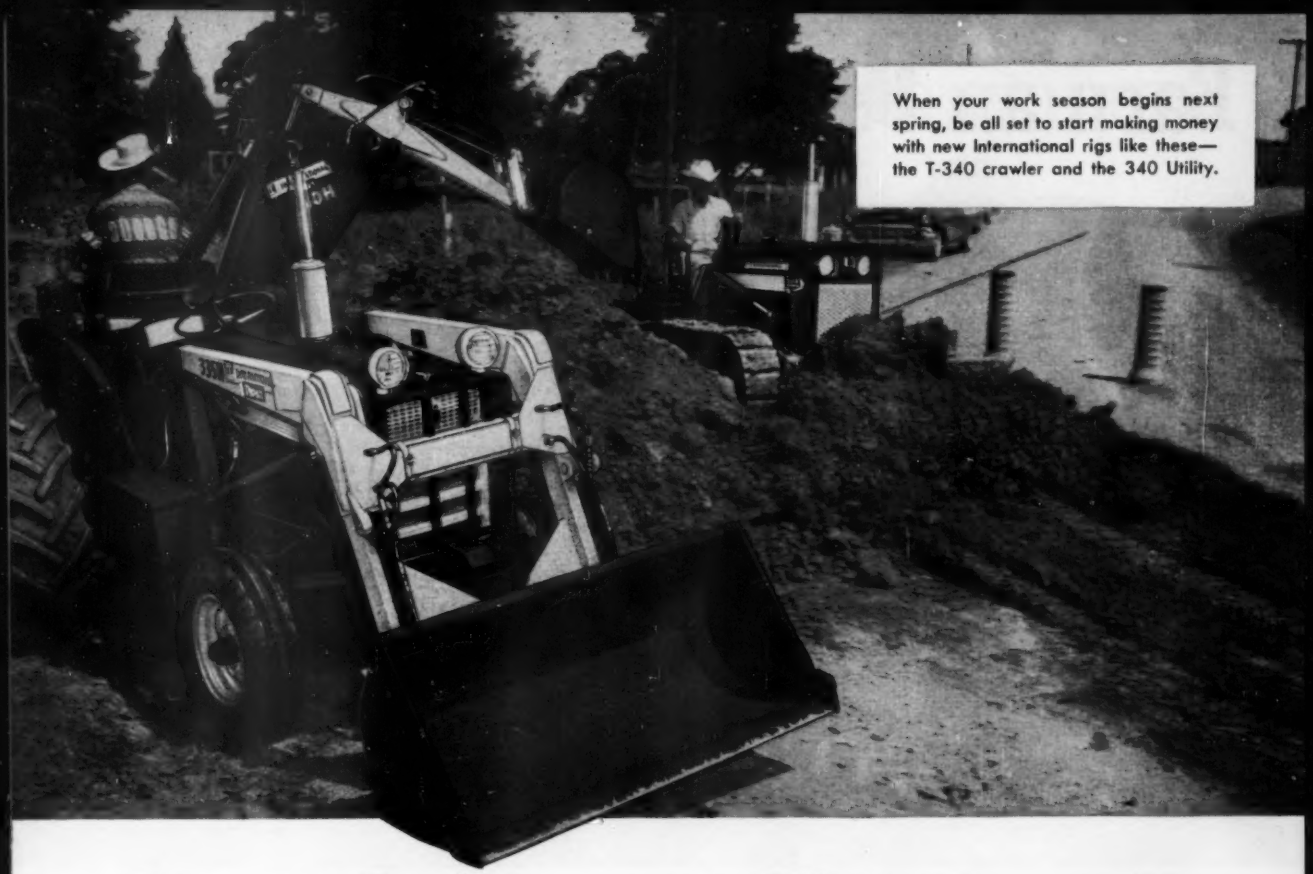
Plan for a "Garbage-Free" Community

605 Numerous municipalities have solved their sanitation problems economically by adopting a city-wide plan of garbage disposal by kitchen grinders. For details on the benefits, a list of participating cities, and sample city ordinances, write IN-SINK-ERATOR MFG. CO., RACINE, WIS.

Low-Cost Sewage Treatment for the Small Community

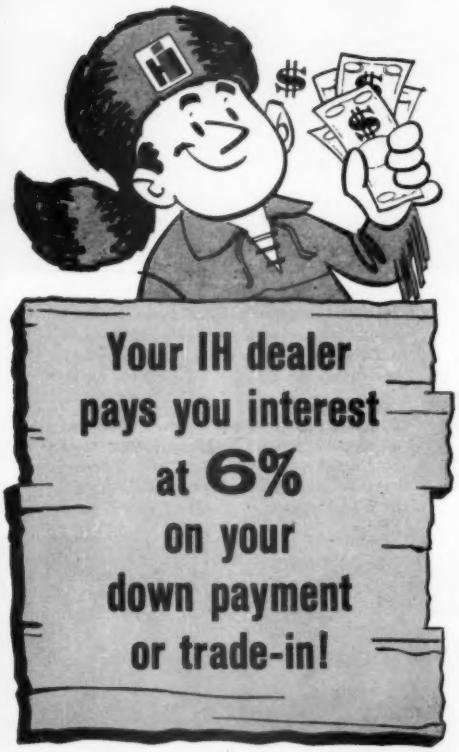
606 A new bulletin describes the Suburbia, which offers efficient, complete sewage treatment at nominal cost to the small community (200-2,000 population) furnished and installed on a turn-key basis. For a copy, write MUNICIPAL SUPPLY CO., 4625 ROANOKE PKWY., KANSAS CITY, MO.

(See page 75 for more Bulletins)



When your work season begins next spring, be all set to start making money with new International rigs like these—the T-340 crawler and the 340 Utility.

Get set for '60... your IH dealer will



pay you cash to deal now!

It will pay you to be an Early Trader! For a limited time only, your IH dealer will pay you good, hard cash to deal NOW. *By dealing now you:*

1. Earn interest at the rate of 6% on your trade-in, *payable immediately in cash.*

2. Earn interest at the rate of 6% on your cash payments —either down payment or full cash settlement—*payable immediately in cash.*

3. Get more for your trade-in because your IH dealer wants used equipment now, while he still has plenty of time to recondition it.

4. Protect yourself against possible price increases between now and specified dates next spring.

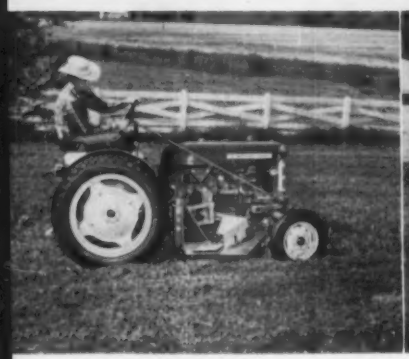
5. Obtain financing on time sales to meet your personal situation.

6. Assure yourself that you will get delivery of the IH industrial wheel or utility crawler tractor and equipment you need, *when* you need it.

You have the jobs... Your IH dealer has the power and equipment to match...

Earn an IH Early Trader's Bonus

Smooth, 6-cylinder power, combined with 4,840 pounds of built-in brawn, give you high-capacity trenching, loading, and backfilling with the 61-hp International 460 Utility.



No other tractor does so much, at such low cost, on so many types of jobs as the International Cub® Lo-Boy.® Here it is with 60-inch International Danco rotary mower.

The husky 45 hp International 340 has the built-in strength and stamina for heavy-duty landscaping, trenching, and materials handling. It leads its power class in fuel economy, too.

Unusual earthmoving versatility is provided by the International Danuser Terra-Scoop with hydraulically-controlled scarifying, loading, dumping, and spreading action.

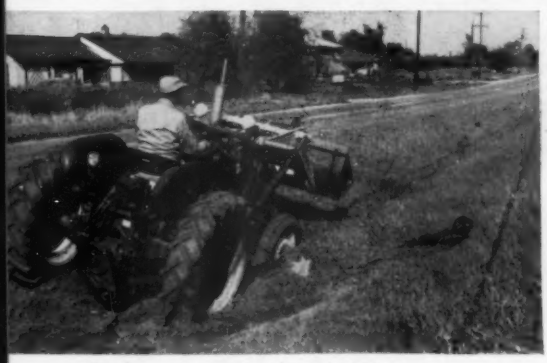
From mowing to snow removal is all in the year's work for the 13.4 hp International Cub Lo-Boy. The Lo-Boy is shown below, with 54-inch IH front-mounted blade.

It's materials handling unlimited with a heavy-duty front end loader equipped with fork lift attachment. It easily interchanges with crane boom or materials bucket.

Mow an 8-foot strip, on slopes as steep as 2 to 1, at 5 mph or faster! You can do it with an International Danco center-mounted mower on the rugged IH F-460 tractor.

on rigs like these...and many more!

The 45 hp International Drott T-340 Four-In-One combines a ¾-yd bucket, a scraper, a clamshell, and a dozer all in one machine. Handles jobs no single-purpose rigs can do.



For low-cost operation, the 38.5 hp International 240 Utility, shown with International Wagner loader and International No. 23 side-mounted cutter bar mower, is tops.

Up to ⅓ cu yd bites speed trenching with the big, 72 hp International 560 tractor, shown here with International Pippin heavy-duty backhoe and loader with ¾ cu yd bucket.

On wheels or tracks the most complete line of utility power and equipment is at your IH Dealer

Cash in hand can be yours on the *exact size* of utility power you want, when you go to your IH Dealer for an Early Trader's Bonus deal! With seven sizes of wheel tractors, rated from 13.4 to 95 hp, and the 45-hp T-340 crawler, your IH dealer is headquarters for *job-matched* power. You don't have to pay for a bigger tractor than you need, nor slow down your jobs with an under-powered rig! For each model, there's a broad line of bonus-earning, matched equipment. Each unit-engineered machine gives top capacity, performance, and dependability with its matching International® tractor.

You've everything to gain, nothing to lose by having your IH dealer figure your deal *today* . . . the sooner you deal, the bigger your bonus!

The earlier you trade the more you save . . .

Deal now...save 3 ways...

on all your 1960 utility tractor and equipment needs

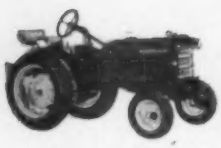
1. Big cash savings now

Buy now. Collect an Early Trader's cash Bonus. Trade in used machines and collect interest at the rate of 6% for a specified period of time on the value of the trade-in and any cash payments you make. This offer good for a limited time only. The sooner you trade, the more you save.

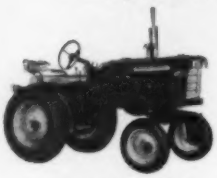
2. The right size power at the right price!

Only International offers such a diversified range of utility power and equipment to meet your job needs. Power from 13.4* to 95 hp*, with unit-engineered equipment, insures long, dependable, full-capacity operation.

**Maximum flywheel hp at standard sea level conditions.*



International Cub Lo-Boy, 13.4 hp*



International 140, 28.25 hp*

International 240 Utility, 38.5 hp*

International 340 Utility, 45.25 hp*

International 460 Utility, 61 hp*, gasoline, Diesel, LP Gas

International 560, 72.5 hp*, gasoline, Diesel, LP Gas

International 660, 95 hp*, gasoline, Diesel, LP Gas

International T-340 Crawler, 45 hp*

3. Backed by the industry's quickest available service

Only International offers you such readily available help for your parts and service needs. No matter where your job is located, one of a nationwide network of 5,000 dealers is nearby. He has well-equipped service facilities, a substantial supply of parts, and factory-trained mechanics. His parts department in turn, is backed by the industry's most extensive network of factory parts depots.

Big Early Trader's Bonus cash savings are available NOW on all the International tractors illustrated above. You also get a bonus on International Pippin and International Wagner backhoes and loaders; International Drott T-340 4-in-1; International Danuser blades, scoops, and scraper-scarifiers; and International Danco heavy-duty, center-mounted mowers. There's an IH Dealer near you—see him now for full Early Trader's Bonus Plan details!

● IH factory parts depots
. Each dot represents 10 dealers

International Harvester reserves the right to withdraw its Early Trader's Bonus at any time, and will assume no obligation for orders executed under the plan after that date.

See your

INTERNATIONAL HARVESTER

dealer

International Harvester Products *pay for themselves in use* . . . Farm Tractors and Equipment . . . Twine . . . Industrial Wheel Tractors . . . Motor Trucks . . . Construction Equipment—Chicago 1, Illinois.

FREE catalogs

Write directly to the address given or use the Post Card on page 55.

Insure Nonskid Winter Streets

607 Sand, cinders, chips, salt, calcium chloride—the Fox mountable materials spreader distributes them all at savings in time, labor and equipment. For catalog literature, case history reports and up-to-date specifications, write FOX RIVER TRACTOR CO., ROAD MACHINERY DIVISION, 1020 N. RANKIN ST., APPLETON, WIS.

Sewage Plant Protection

608 . . . is the title of a highly informative booklet that will help municipal sewage plant superintendents even the odds against the ever-threatening, ever-present problem of corrosion. For a copy, write KOPPERS COMPANY, INC., TAR PRODUCTS DIV., DEPT. 103L, PITTSBURGH 19, PA.

Facts on Ice and Snow Removal

609 A free book on this subject discusses an effective, clean and economical way to keep streets, freeways and tollroads safer in winter. A copy can be obtained from MORTON SALT CO., INDUSTRIAL DIVISION, DEPT. AC-11, 110 N. WACKER DRIVE, CHICAGO 6, ILL.

Automatic Coin Counter and Sorter

610 Compact, portable, fast and accurate is the way introductory literature describes the Model CS-100, a low-cost automatic coin counter and sorter that counts an average of 15,000 coins per hour. Separate sorting and counting operations provide automatic check of total. For full story, write STANDARD CHANGE-MAKERS, INC., 422 E. NEW YORK ST., INDIANAPOLIS 2, IND.

Protection of Metal Structures, Accurate Chloride Control

611 Two pieces of literature currently available from WALLACE & TIERNAN INC., 25 MAIN ST., BELLEVILLE 9, N. J. are *Bulletin* E-37 and the booklet, "The V-notch Story." The former deals with cathodic protection to prevent corrosion of buried or submerged metal structures; the latter describes the corrosion-proof V-notch chlorinator, made to control chlorine completely to 1/800 of the capacity of your machine.

Corporation Stops

612 These heavy and substantial corporation stops are made of water works bronze with accurate and carefully machined threads, and have outlets for flare type connections to copper tubing. They are available in several sizes and are packaged for protection against damage and dirt and convenience in handling and storing. For details, write THE FORD METER BOX CO., INC., WABASH, IND.

Air Compressor Handles Two Jobs Simultaneously

613 Model 260, designed for tire service trucks and equipped with a Willys industrial engine (2 cylinders for power, 2 to compress air), pumps from 0 to 130 pounds pressure in 20 seconds and furnishes enough air to operate two air tools and inflate tires simultaneously. For descriptive literature, write GENERAL SUPPLY CO., 1920 McGEE TRAFFICWAY, KANSAS CITY 8, MO.

(See page 77 for more Bulletins)

RIPS WIDEST STUMPS TO SHREDS . . . IN MINUTES!

FIRST IN THE FIELD

THE ORIGINAL, VERMEER POW-R-STUMP CUTTER

You'll never know how easy stump removal can be, unless you've seen the Pow-R Stump Cutter in action. Here's the machine that has simplified this expensive, back-breaking, laborious job in cities, parks, golf courses and cemeteries all over the country. A one-man operation . . . a real time saver . . . a real labor saver! The Pow-R Stump Cutter removes the largest tree stump — rips it to shreds down to a depth of 10" below the ground — all in a matter of minutes. "Removed 44 stumps in 8 hours with the Pow-R-Stump Cutter" . . . is the report from one city recently.

The Leader . . . 10 To 1 Choice Of Tree Experts Everywhere

The Vermeer Pow-R Stump Cutter was FIRST . . . the original stump remover. It's a quality machine, ruggedly built to take on the toughest, largest stumps. Cuts wider stumps (a full 72") and higher stumps (37" above the ground) at one setting! Operator has full view of cutting wheel at all times . . . behind wire mesh safety shield.

WRITE FOR COMPLETE ILLUSTRATED LITERATURE AND LOW PRICES NOW

No stump to be hauled away. No gaping holes to fill. No damage to driveways, curbs or sidewalks. Get all the details by mailing the coupon below.

Send complete descriptive literature and prices on your Pow-R Stump Cutter to:

NAME .....

TITLE or DEPT. .....

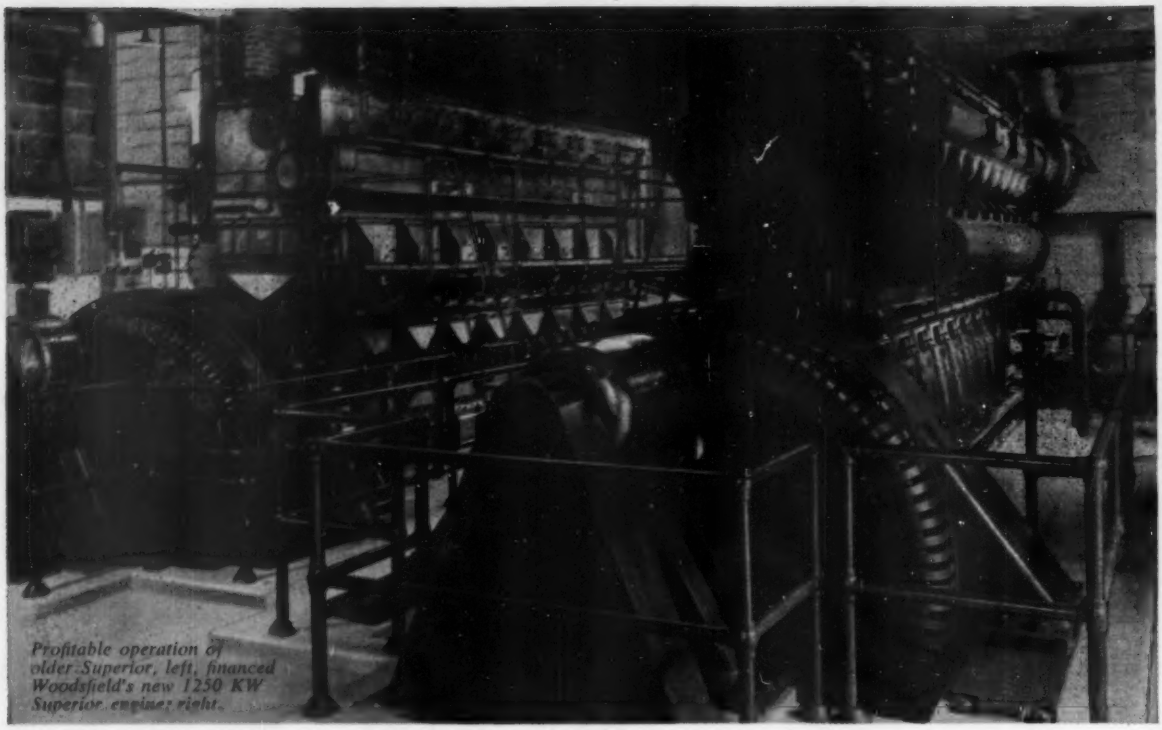
FIRM .....

ADDRESS .....

CITY ..... STATE .....

VERMEER MANUFACTURING CO.

1452 W. WASHINGTON • PELLA, IOWA



Profitable operation of older Superior, left, financed Woodsfield's new 1250 KW Superior engine, right.

80-GDS-8 runs 44,000 hours without overhaul, cuts fuel cost 50%, pays for second diesel!

Superior engines power Woodsfield's boom!

Olin Mathieson's new aluminum plant on the Ohio River, 18 miles from Woodsfield, caused the town to grow more during 1957-59 than in the previous 25 years combined! Power consumption soared from 2,921,740 KW in 1956 to 4,167,260 KW in 1958, as acres of new worker homes hit the line.

But economy-minded city fathers and maintenance-conscious power plant personnel met the crisis, aided by two Superior engines. The first, an 80-GDS-8 dual-fuel of 600 KW capacity, entered service in 1950. During the next 7 years, it reduced costs per KWH 50% as compared to Woodsfield's 3 older straight diesels. After 44,000 hours operation, it was overhauled in 1958. The only replacements needed were connecting rod bearings. Piston rings were replaced, too, although their .002″ wear was well within tolerances.

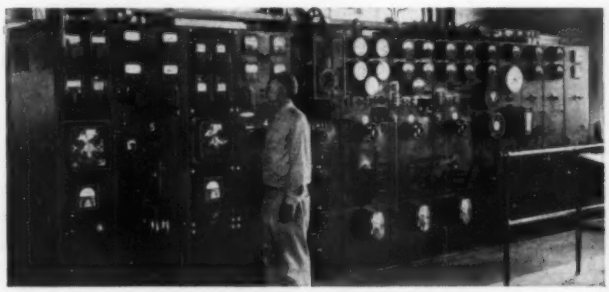
This Superior did more than supply consumers with low-cost electricity. Power profits also financed various municipal improvements, including a second Superior engine-generator! The new 80-GDSX-8 supercharged dual-fuel of 1250 KW capacity commenced operation in early 1958. In addition to maintaining low fuel costs, it operates more than 50,000 horsepower-hours per gallon of lube oil!

For every municipal need, White Superior offers economical diesel, dual-fuel, or gas engines ranging from 190 to 2150 HP, or 150 to 1500 KW!

Superior ENGINES · ATLAS Imperial DIESEL ENGINES · White DIESEL

White Diesel

WHITE DIESEL ENGINE DIVISION
THE WHITE MOTOR COMPANY
Plant and General Offices: Springfield, Ohio



L. W. Marple, plant superintendent, checks controls of town's five power-producing engines.

FREE catalogs

Write directly to the address given or use the Post Card on page 55.

Free Calculator for Asphalt Paving

614 This new slide-rule type calculator permits its user to figure the area or tonnage of asphalt mix needed to pave any road of known length, width and thickness of mat. Another scale allows immediate computation of tons of stone or yards of dirt involved in any road widening operation where the necessary dimensions are known. The calculator can be obtained free from any BARBER-GREENE distributor or sales office in the United States and Canada.

Jail and Prison Equipment

615 The nation's largest firm specializing in the planning, engineering, manufacture and installation of jail and prison equipment, and able to point to more than 4000 installations in 41 states, has published the booklet "Jail and Prison Equipment and Design." For a copy of A.I.A. File No. 35-N-5, write SOUTHERN STEEL CO., P. O. DRAWER 2021, 4634 S. PRESA ST., SAN ANTONIO, TEXAS.

85cfm Rotary Portable Compressor

616 The most compact unit yet produced by the GARDNER-DENVER CO., QUINCY, ILL., is the oil-air-cooled Model RP85 compressor, especially designed for jobs requiring limited air output and maximum portability. It is reported to be particularly suited to repair and construction work on streets, highways, sewers and utilities, and to shop maintenance uses.

Cores for Rotary Street Sweepers

617 In addition to a wide variety of rotary broom sweeper cores, KENNEDY'S VAN BRUSH MFG. CO., INC., will furnish steel wire and fibre drag broom levelers, push brooms, cocoa mats for bituminous rollers and concrete and cement brushes. A detailed description of all Van Brush products can be obtained by writing the company at 2748 McGEE TRFWY., KANSAS CITY 8, MO.

For Useful Data on Concrete Surfacing

618 If you plan to embark on a street paving program and would like to know more about concrete streets, write for free information to the PORTLAND CEMENT ASSOCIATION, DEPT. A11-4, 33 W. GRAND AVE., CHICAGO 10, ILL.

Self-Closing Waste Receptacles

619 Strategic placement of these sturdy, outdoor enamel-finished waste receptacles in public areas will invite use, discourage litterbugs, keep streets cleaner. A fully illustrated catalog gives detailed information on them; for your copy, write BENNETT MFG. CO., INC., ALDEN, N. Y.

Aluminum Glass Covers for Sewage Treatment Plants

620 When you enclose sludge drying beds with these glass covers you increase the efficiency of the beds eliminate nuisances and add to the attractiveness of the building. They are also worth considering as covers for trickling filters and settling tanks. *Engineers' Service Sheets* AC-1059, available from LORD & BURNHAM, IRVINGTON, N. Y., contain details, recommendations and specifications for every job request.

Aluminum Traffic Signs

621 Cost-saving facts and availabilities on lightweight, rust-proof, durable aluminum traffic control signs have been compiled in a brochure by KAISER ALUMINUM & CHEMICAL SALES, INC., DEPT. TS-34, 1924 BROADWAY, OAKLAND 12, CALIF.

Save Time, Labor with Automatic Valve Operator

622 Illustrated *Bulletin* No. 49 gives complete information on the Pelton valve operator, which can be used with a variety of valve types and is adaptable to a completely automated system as well as simple push-button control. For a copy, write PELTON DIVISION, BALDWIN-LIMA-HAMILTON, 2929 NINETEENTH ST., SAN FRANCISCO 10, CALIF.

Highway and Sewer Products

623 New literature from THE PHILIP CAREY MFG. CO., CINCINNATI 15, OHIO, provides information on materials for highway and sewer use. They include expansion joints, hot and cold pour-type sealing compounds, cold plastic sewer joint cement, hot applied asphaltic sewer joint compound and waterproofing felt and fabric for traffic surfaces.

Auxiliary Fire Alarm System

624 *Bulletin* DD-52388-E describes a reliable, automatic emergency signaling system that finds wide application as an auxiliary to municipal fire alarm telegraph system. For details on the "Protectolarm," write B & B ENGINEERING CORP., NORWOOD, LA.

Delivering over two million gallons of water a day, this new municipal well at Xenia, Ohio—equipped with an 18" Wire Wound Cook Well Strainer—will continue to produce at a steady maximum flow for many years to come. You can count on dependable service from a Cook Well Strainer because of its exclusive self-cleaning V-shaped slot that prevents clogging and guarantees maximum delivery over long periods. Larger inside than out, the V slot allows for maximum development —permits a fast free flow of water with minimum friction loss.

Why not investigate the advantages of Cook Well Strainers? Wire Wound and Brass Tube types available in all standard diameters with as many different slot sizes as required. Made from Red Brass, Silicone Bronze, Armco Iron, and Stainless Steel. Eight to twenty-four hour delivery often possible by telephoning Cincinnati HUmboldt 1-8800.

COOK WELL STRAINER CO.
6330 Glenway, Cincinnati 11, Ohio

WORLD'S LEA NAME IN WELL STRAINERS

Model 8250 Blade with 12' Wing, Truck Grader Ice Blade and Hydraulic Spreader as furnished Commonwealth of Massachusetts.

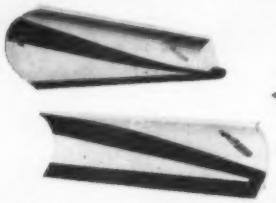
WAUSAU— EQUIPMENT IS BUILT TO "TAKE IT"

WAUSAU has maintained its leadership since the pioneer days of snow plowing through constant improvement in manufacturing techniques, the use of alloy metals and by closely engineering snow plows to the added power and speed of new trucks. The name WAUSAU on your snow plow will always remain a symbol of quality.

HIGH SPEED BLADE PLOWS

Now available in discharge heights from 4' to 7' in a wide selection of shapes . . . designed for trucks of 2 tons to 15 tons capacity.

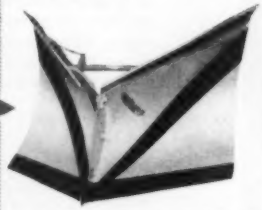
TRIP BLADE PLOWS



Trip Blade Snow Plows are practically standard equipment for city use — but only WAUSAU builds Trip Blades with simple, self-cleaning, readily adjustable compression springs . . . 12 Models available for almost any motive power.

"VEE" TYPE PLOWS

The severe storms of last winter again prove the Vee Plows to be indispensable. There are 14 Models of WAUSAU Vee-Type Plows to fit anything from a farm tractor to a 54,000 GVW truck.



TRUCKGRADER ICE BLADE

Truly a versatile year 'round maintenance unit . . full Hydraulic cab control.

MATERIAL SPREADERS

Quick action low cost self-contained unit . . . 8' to 20' spread width . . . hopper capacity 2 cubic feet.

Write today for the name of your nearest WAUSAU distributor who will assist you in getting equipment to fit your needs.

WAUSAU IRON WORKS WAUSAU WISCONSIN

Pioneer Snow Plow Builders

Truck Grader Ice Blade and Material Spreaders

FILTER SAND AND GRAVEL

Produced from an inland pit hence free from river contamination and foreign matter.

Shipment in bulk or bagged.

Many of the larger filter plants throughout the United States are equipped with our products.

PROMPT SHIPMENT

Inquiries and orders solicited

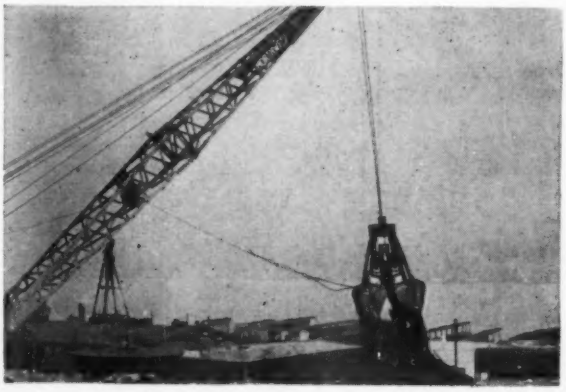
NORTHERN GRAVEL COMPANY

Muscatine, Iowa

P.O. Box 307 Amherst 3-2711

No spot for a breakdown!

KEEP IT GOING AT ITS BEST...USE ONLY GENUINE HAYWARD REPAIR PARTS!



Hayward Buckets are designed with the most efficient construction features known. And only with *genuine* Hayward replacement parts can you be sure of maintaining that same high quality. Cheaper "bootleg" parts reduce efficiency, raise costs and disrupt schedules.

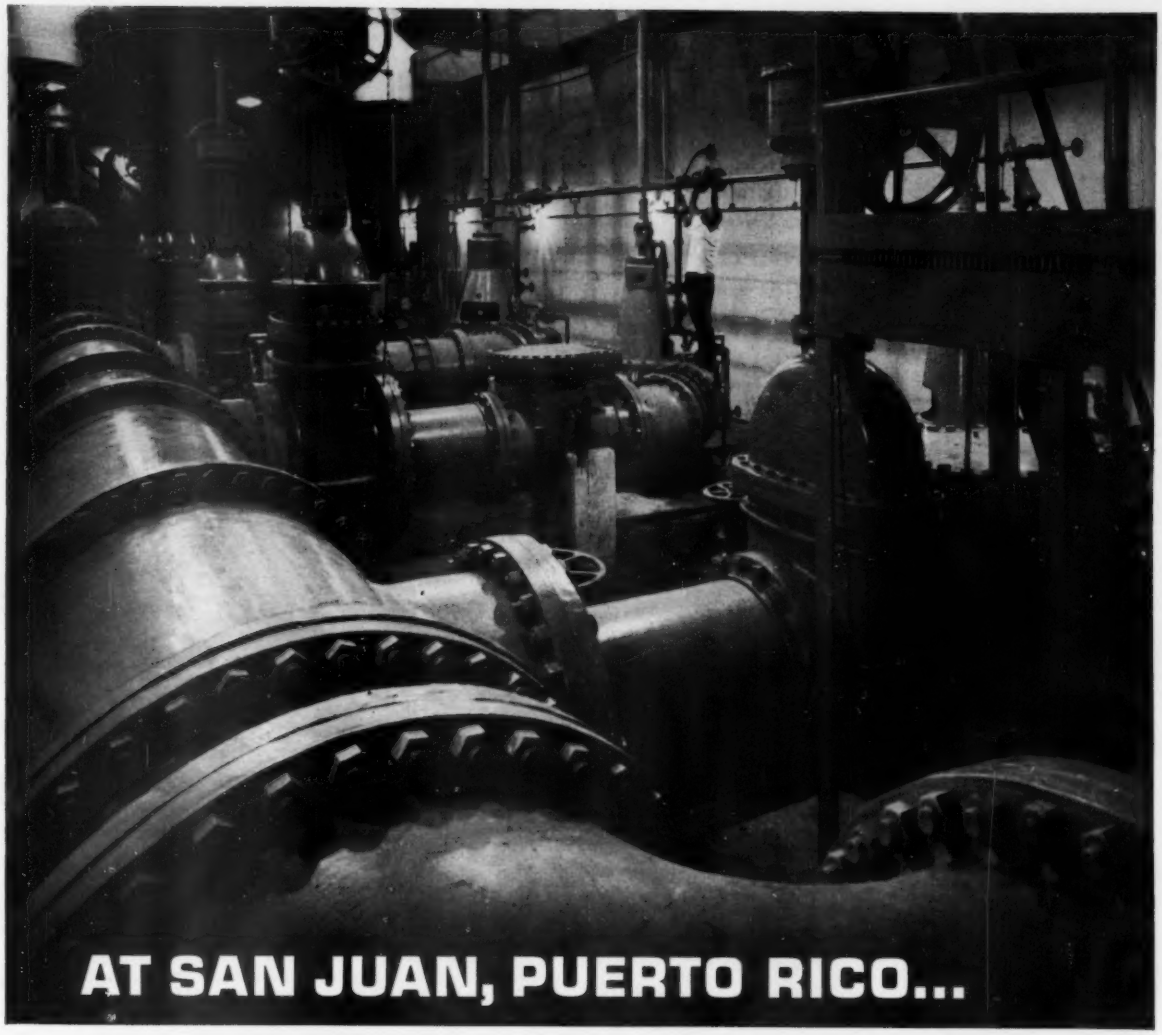
Anticipate any possible breakdown.

Write today for list of genuine Hayward parts.

THE HAYWARD COMPANY

50 CHURCH ST., DEP'T A, NEW YORK 7, N. Y.

Builders of Better Buckets Since 1888



DARLING VALVES GET THE CALL

in new high capacity sewage treatment plant

Shown above is the main pump room at the new Puerto Nuevo sewage treatment plant in San Juan, Puerto Rico... designed to serve nearly 600,000 persons by 1975.

Here, Darling Valves are on the job... ranging in size from 3" to 48". Darling's exclusive *fully revolving double disc parallel seat* feature and "no pocket" discs provide positive sealing and assure ease of operation.

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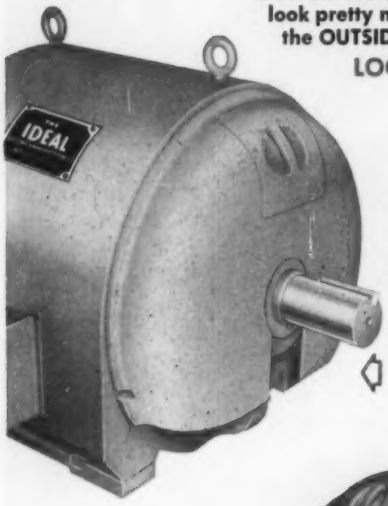

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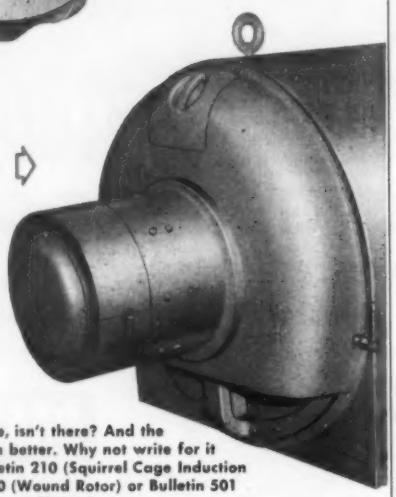

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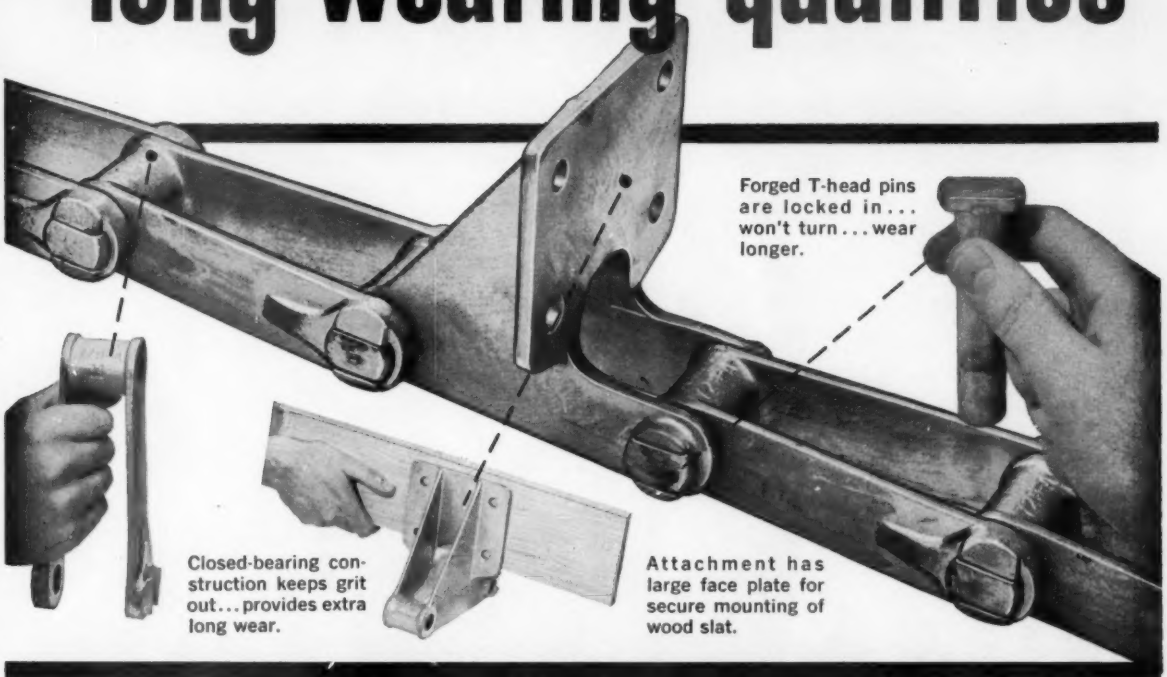
Why Moline long pitch pintle chain has long wearing qualities


Forged T-head pins are locked in... won't turn... wear longer.
Closed-bearing construction keeps grit out... provides extra long wear.
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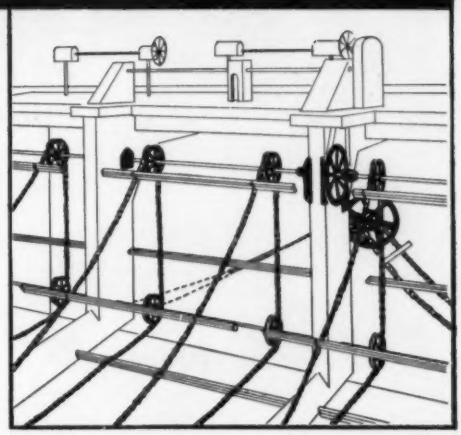
Write for information and prices or phone your local Moline representative.



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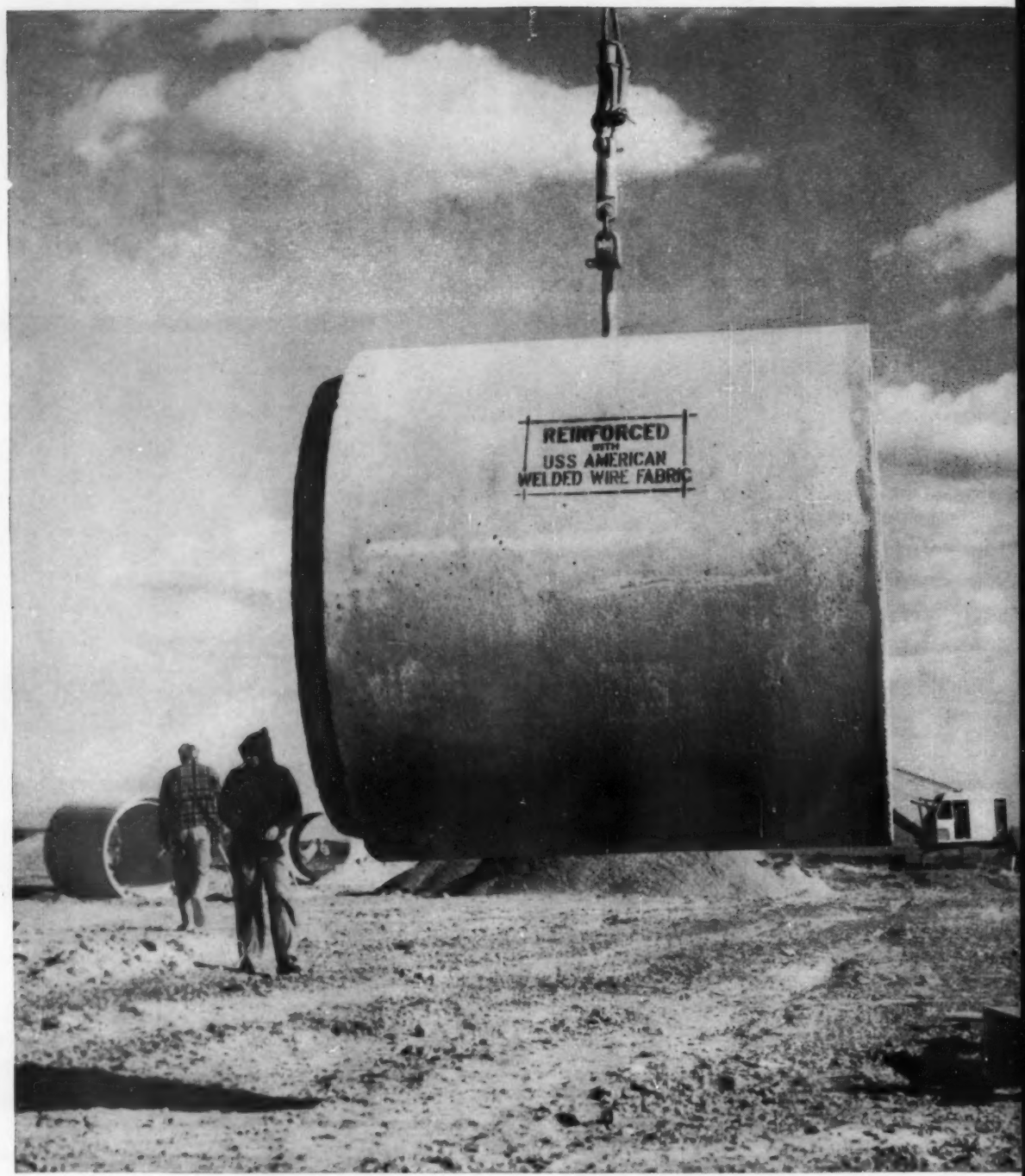

This 96" diameter reinforced concrete pipe easily met the rigid requirements of ASTM Specification C76-57T. Tests indicated this reinforced concrete pipe was capable of loads exceeding 100,000 pounds, demonstrating the strength and durability.

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Abbott Contractors, Chicago, Illinois—Sub-Contractors
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Richard I. Bong Air Force Base Runway Drainage

More than 48,000 linear feet of concrete pipe was included in the Corps of Engineers specifications for the Richard I. Bong Air Force Base at Kansasville, Wisconsin. Many sizes were required, the largest being 96″ inside diameter. All reinforced concrete pipe was manufactured and pre-tested to meet the rigid requirements of ASTM Specification C76-57T. The 96″ pipe was required to meet a loading test of 96,000 pounds. It met this requirement easily and could have withstood loads exceeding 100,000 pounds!

Reinforced concrete pipe is designed in conformance with specifications comprehending the laws of mechanics plus the results of thousands of tests; it is manufactured by men experienced with concrete product production; and it is pre-tested to demonstrate its strength. The pre-testing is done by means of the 3-edge bearing test which is the most severe loading to which the pipe will ever be subjected!

Reinforced concrete pipe installations, in service for many years, are testimony to the strength, durability and watertightness of concrete pipe reinforced with Welded Wire Fabric.

Concrete pipe manufacturers insist on top-quality reinforcing, meeting rigid specifications—that's why so many of them use American Welded Wire Fabric. This quality product, with its machine-made accuracy, assures the proper distribution of steel. It is prefabricated from cold-drawn, 60,000 psi yield strength wires. All intersections are electrically welded to assure mechanical anchorage in the concrete. Wire diameters as large as 0.505″ on 2″, 3″ or 4″ centers can be furnished. Its rigid specifications assure superior reinforcement.

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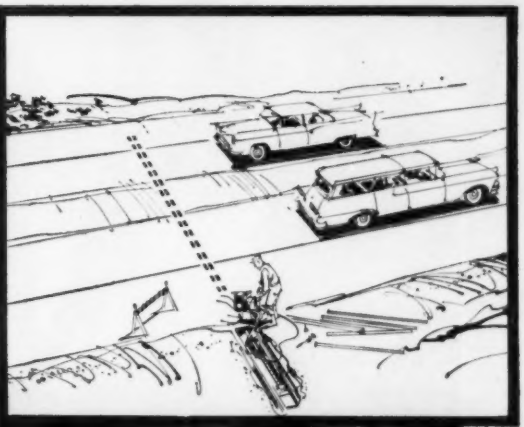
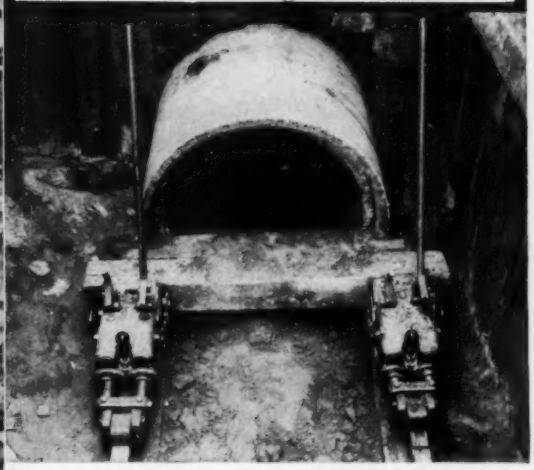
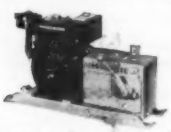




Two No. 795 Pushers in twin setup pushing large concrete sewer pipe under tracks.

OTHER GREENLEE TIME SAVING TOOLS TO SPEED YOUR JOBS, CUT COSTS



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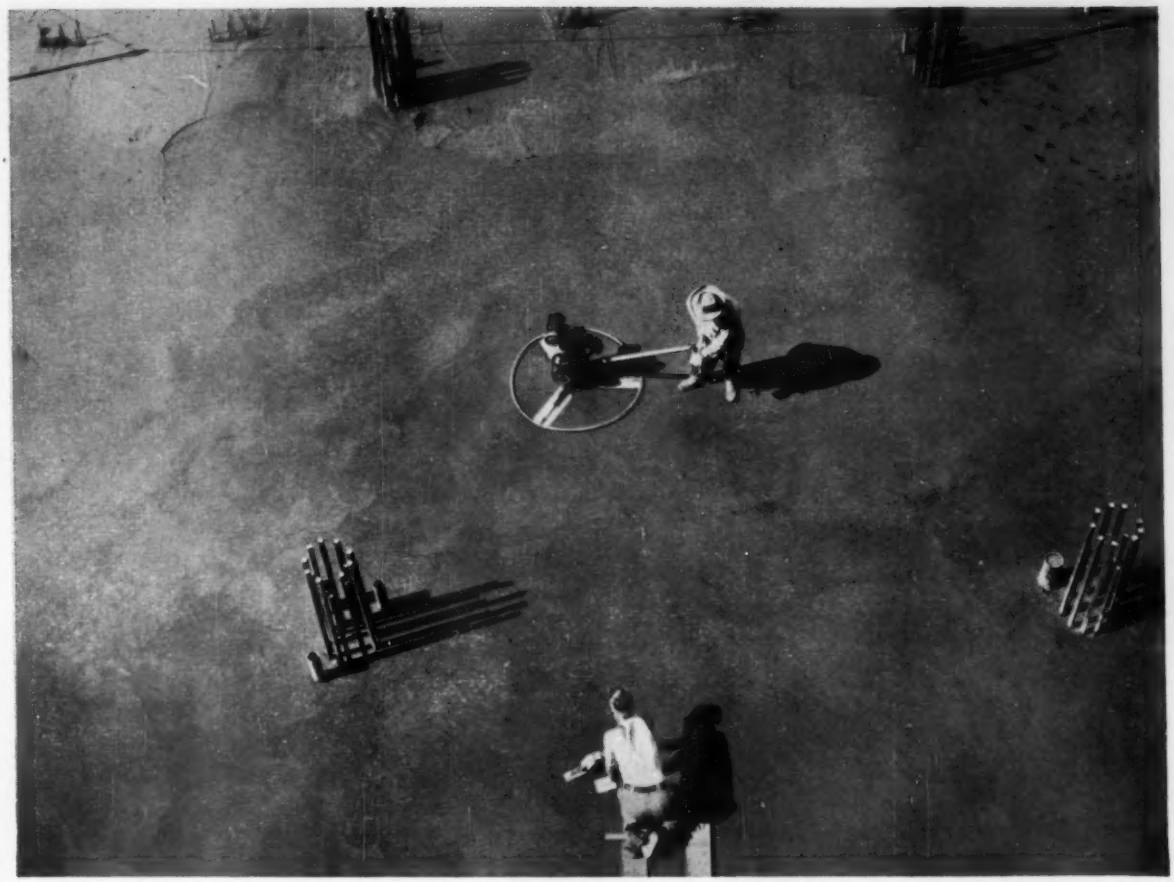

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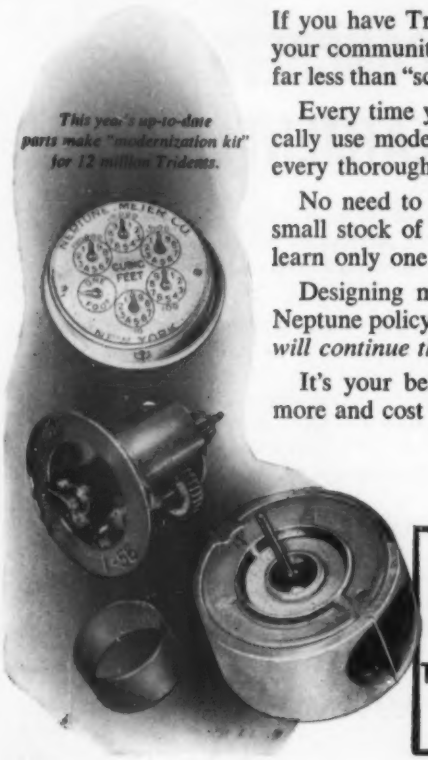

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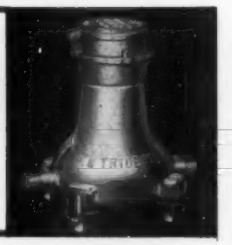

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NOVEMBER 1959

The American City

A New Type of Municipal Incinerator

Whitemarsh Township, Pa. builds nation's first "horizontal flow through" incinerator, combining it with sewage purification to provide efficiency and economy for both

By I. M. GLACE, Jr.*

Trucks discharge the refuse into an unusual hopper-conveyor. Movable steel barriers crowd the refuse through the opening into the storage conveyor below.

Whitemarsh Township, Pa. is typical of many suburban communities that find themselves in the familiar pattern of growth and expansion. It is located some 20 miles northwest of Philadelphia and seven miles east of Valley Forge in a region filled with reminders of Revolutionary War history.

Although essentially residential, it has a thrifty industrial area along the Schuylkill River at the southern end of the township. From 1920 to 1950 its population increased from 3,436 to 5,977. But by 1957 the estimated population had risen to 12,000, industry had increased and the need for a well-planned sanitary system was becoming urgent.

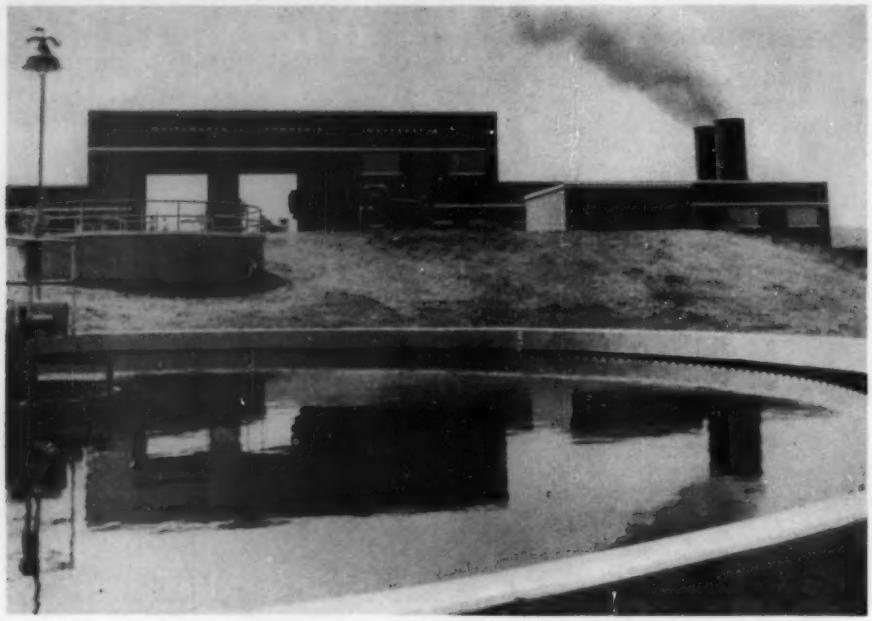
However, while Whitemarsh's growth may be typical, its solution to the sanitation problem certainly is not. The combination sewage purification and refuse incinerator plant is the first of its kind in the nation.

Authority Formed

The township supervisors created the Whitemarsh Township Authority to construct a sewage system and treatment works, and an incinerator plant to dispose of refuse. The Authority acquired 40 acres of rolling land for this purpose and retained Glace & Glace of Harrisburg as consulting engineers. Neighboring Cheltenham Township requested joint use of the incineration facilities, agreeing to make an appropriate payment.

Payment is based on its proportion of the cost involved, calculated on the weight of refuse delivered. This includes both operating and capitalized cost, based on 25-year bonds. The current payment is $5 per ton, and is recalculated annually, with adjustments made for over or under payment. This meant that, with 12,000 persons in Whitemarsh Township and 38,000 in Cheltenham using the service, an incinerator would have to burn the refuse contributed by 50,000 persons. The construction costs of the combination project involved slightly more

* Mr. Glace is head of the firm of Glace & Glace, Inc., Consulting Engineers, 2771 Paxton Street, Harrisburg, Pa.



The overall view of new Whitemarsh Township incinerator shows the clear white smoke plume of fly-ash-free steam.

than $3 million. Of this amount the incinerator cost accounted for $825,000.

The capacity of the plant was based on an estimated contribution of three pounds of refuse per person per day, with this rising to four pounds in 20 years. Actual figures show that the contribution was 2.8 pounds.

Both the sewage treatment plant and the incinerator went into operation this past spring. While the sewage plant will not begin full-scale operation until 1961 when 100% connection to the sewer system will be completed, the incinerator was able to begin working immediately.

The incinerator is the first in the nation of what is now being called the "horizontal, continuous flow" design. It has these advantages:

1. It provides refuse storage without requiring a bridge crane.

2. It eliminates the danger of a man's accidentally falling through the charging doors into the furnaces.

3. It provides continuous feeding and burning under controlled conditions—difficult to duplicate under batch feeding.

4. Its stack gases are scrubbed clean of fly ash; the stack is low and inconspicuous.

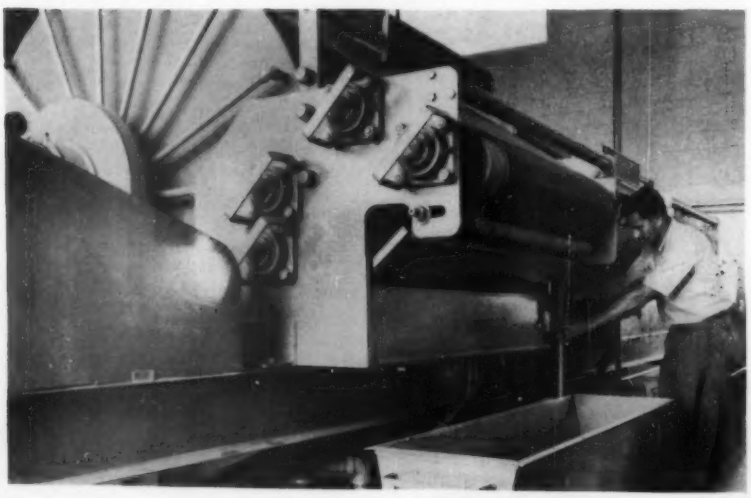
5. It is not costly.

The incineration equipment was developed and installed by Dravo Corporation, Pittsburgh, under a sub-contract from William H. Gill of Lansdowne, Pa. It has a capacity of 12½ tons an hour or a 24-hour capacity of 300 tons. Current daily contributions are only a third of that amount. Under the contract agreement the Dravo organization has agreed to guarantee exacting performance specifications.*

Both location and design of the incinerator contribute to operating economies. Building the incinerator adjacent to the sewage plant permits the two plants to complement each other. Treated effluent from the sewage purification plant is used as industrial water for cooling purposes and in the wet scrubber for fly ash and air pollution control.

At the same time, raw sludge collected in the sewage plant is be-

* These performance specifications will be supplied to interested municipal officials by the consulting engineers.



The incinerator receives dehydrated undigested sludge from the sewage purification plant, thus eliminating the expense of digesters. The sewage plant also provides water for the furnace coils and stack-gas scrubbers.

The burned refuse first drops into a quenching tank where drag conveyors remove it . . .

. . . and transfer it to a waiting truck for disposal.

ing dehydrated on vacuum filters and fed into the incinerator with normal municipal refuse. This eliminates the need for sludge digestion facilities and has saved about $200,000 in construction costs of the sewage treatment plant.

The proximity of the two installations also cuts down on the combined personnel requirements, since one man often can provide services in both plants when necessary. However, the low manpower requirements of the incinerator are inherent in its design. Only four men are needed to run the plant, compared with nine or ten men for a bin-and-storage plant of comparable capacity. The four include one man to weigh trucks and supervise unloading, a second to operate the conveyor, a third to load and drive the truck carrying away non-combustibles, and a supervisor to exercise overall control and see that proper combustion is maintained.

For an incinerator of this type, the Whitemarsh Township location is ideal. Since the plant is located on a slope, the material passes through the incinerator on a gravity-flow basis. On level ground it would have been necessary to elevate the storage conveyors and provide ramps for trucks to unload.

With the exception of the scales, every step of the incineration process is enclosed. The weighmaster's office is located between an outdoor truck scale and the indoor unloading area so that one man can supervise both weighing and unloading.

After being weighed, a truck enters the building, driving over one of two slotted floor positions. These slots are located between guide posts and enclosing steel barriers that prevent the possibility of the wheels dropping into the slot.

When the truck stops over the slot, the refuse is dumped and either falls through the slot onto the storage conveyor or remains piled on either side of the slot between the barriers. The conveyor is large enough to receive refuse from one 8-hour collection period.

The truck then is driven away and the barriers, which are pneumatically operated, slide toward the slot from either side, pushing all the remaining material into the storage conveyor. Since the unloading takes place indoors, there is no danger of dust or paper blowing about the plant area.

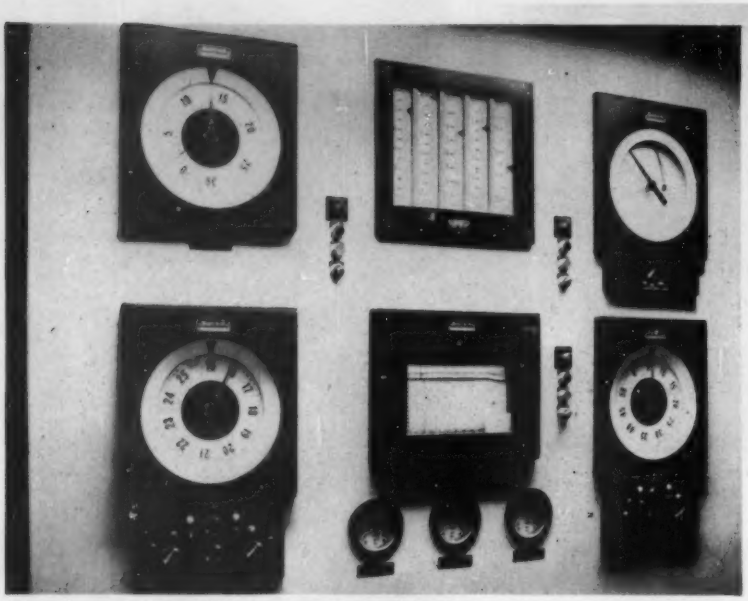
The storage conveyor consists of two large oscillating hoppers side by side but independently controlled. Conveying action is obtained by oscillating the hoppers, which throw the material forward in short reciprocating arcs without refuse adhering to the bottom or sides of the conveyor. The action is self-scouring and keeps the storage trough completely clean.

Each conveyor is activated by eccentrically weighted rotors; these are driven by a 75 hp electric motor through a pneumatic clutch.

The hoppers are mounted on air springs positioned vertically within set limits by a regulated air pressure which compensates for the load in the conveyor. The same system supplies air to the pusher-barriers used for unloading.

Refuse empties from the conveyor into two hydraulic ram-type feeders, which charge it into the incinerator furnace. These feeders operate automatically on a controlled time cycle and are arranged in conjunction with the furnace gates so that a layer of refuse is locked against the gates, maintaining an air seal at the charging entrance.

The conveyor operator, stationed at the transfer point between the



The plant is thoroughly instrumented with Minneapolis-Honeywell indicating and recording meters, and push-button controls.

conveyor and the feeder, also inspects the load as it passes for material of unusual proportions or of a dangerous nature.

The furnace is a large barrel-shaped enclosure with an inclined reciprocating stoker floor that tumbles the material being burned so that the maximum surface area is exposed. To insure complete combustion, forced-draft fans supply air through the grates at a controllable rate, and an over-fire air fan and distribution system provide additional air turbulence in the furnace. The grates are designed to receive refuse at the rate of 87 pounds per square foot per hour.

Fire Brick Walls

Enclosing the furnace are first-quality fire-brick walls with water-cooling pipes embedded in them on 8-inch centers. The cooling pipes maintain a furnace-wall temperature below the normal slagging point of the refuse ash. This water-wall design reduces the need for both refractory insulation and refractory maintenance. The greater heat storage in the furnace walls of other types of incinerators makes it impossible to start and stop the burning operation without a long cooling off period; otherwise, the refractory brick will crack and break.

With the water-wall furnace, it is possible to operate intermittently and for only a few hours out of the day without damaging the walls. It also is possible to maintain consistently higher temperatures, and in this way to improve the combustion and eliminate the noxious odors.

To ignite the furnace, four oil burners are located just outside the front wall of the furnace and operate through openings in the wall during start-up periods. An automatic safety device prevents combustion when the burner is in its normal withdrawn position. Each burner has a capacity of 10-gph using fuel oil. With these burners the furnaces normally reach operating temperatures within ten minutes.

Upon completion of the incineration cycle, ash residue, tin cans, glass and other non-combustible materials are discharged from the stoker grate by gravity into a quenching tank located below the end of the grate. A chain-driven drag-out draws this residue material along the bottom of the tank under a rotary air lock to an inclined ramp at the exit end of the furnace, where the residue is carried up to receiving hoppers for subsequent removal to a sanitary fill about a quarter of a mile from the incinerator plant.

Meanwhile, the furnace gases pass under the rear wall of the furnace, through banks of water sprays which also discharge into the quenching tank. From the sprays the gases are passed upward through a Peabody scrubber where the solid particulate matter is wetted and washed out. This particulate matter also is washed into the quenching tank and from there it is carried off with the non-combustible residue.

Above the scrubber are two 75-horsepower induced draft fans that pull the gases up through the scrubber and out the discharge stacks. By the time the gases reach the stacks, their temperature has been lowered by the sprays and the scrubber to an average temperature of about 170°F. Typical stack discharge is a clean white plume of steam which, to all practical intents and purposes, is completely odorless.

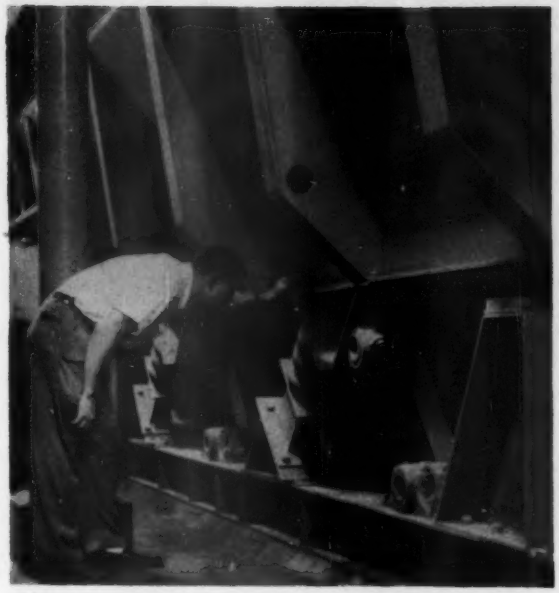
Water used in the incinerator comes normally from the treated sewage-plant effluent and is pumped first into the cooling pipes in the furnace water wall. After repeated circulation through the water wall, its temperature has been increased approximately 60°F. It is then discharged to a secondary storage tank and from there either enters the quenching spray and scrubber system or is emptied directly into the sewage treatment plant outflow at a temperature which does not go above 140°F.

Recirculated spray water, after passing through the quenching tank, is put through a continuous rotary strainer to eliminate any particles over ⅛-inch-diameter for they would clog the spray nozzles and interfere with operation of the scrubber trays.

Although water flows through the water wall at 400 gpm and through the sprays and scrubber at 750 gpm the recirculation limits actual water consumption to a mere one-half gallon per pound of refuse burned.

This is well below the design allowance of one gallon per pound; the difference can be accounted for by the percentage of non-combustible material and moisture present in the average refuse load, as well as the generous safety factors applied to the design.

The only makeup water needed is that which must replace the water evaporated by the furnace gases in passing through the sprays and scrubber, the low-temperature water pumped directly from the water wall into the plant outflow, and the moisture entrained in the residue as it is dragged through the quenching tank. Thus there is



The storage-conveyor can store refuse from one 8-hour shift; it moves the refuse to the furnaces by oscillation.

The furnaces themselves have water-cooled lining as is shown by this network of piping during construction.

no need for a supplementary settling basin in conjunction with the scrubber operation nor is there a problem of contaminated water being discharged from the plant. The scrubber is a stainless unit with sieve trays normally used in process industries.

Cost, of course, is a primary consideration for all municipalities planning the construction of such a facility. In this case, both original and operating costs were reasonable. Original cost of the incinerator, including landscaping and an access road, was $825,500 or $2,750 per ton of rated capacity. This was financed, along with a sewage treatment plant, approximately 42 miles of sewers, and six sewage pumping stations, by a $4,100,000 bond issue.

For the first year it is expected that operating costs will be approximately $38,000. Based on 100 tons of refuse received per day for 300 days, this reduces to an operating cost of **$1.27 per ton.**

One important consideration not yet covered is the appearance of the plant. This has been a matter of prime concern in its design. Not only is the building attractive but more than usual attention has been paid to landscaping because of the plant's proximity to residences. Although other incinerators, even the most modern ones, have tall unsightly stacks to disperse flue gases and ash over the widest possible area, there is no need for this at the Whitemarsh plant, and as a result the stacks are relatively short. Stack gas is a matter of so little importance that a new school has been constructed within 100 yards of the incinerator.

These factors, then, make the Whitemarsh Townshop incinerator a good investment for the community:

It is efficient and provides maximum air pollution control.

Its low man-power requirements reduce operating costs.

It improves the health and appearance of the entire community by eliminating the need for open dumps, and it creates no odor or dirt problem that would offset these gains in any way.

It effectively solves the problem of a growing municipality, handling immediate needs and allowing for substantial future expansion.

About Ready to Switch Jobs

The Glen Ellyn, Ill. Park District is about ready to reassign this tractor to winter season duties. During the warm months this unit, an International 340, pulls a Roseman 5-gang mower to keep some 88 acres of parks trim and attractive. The operator cuts the grass at least once a week.

During the cold months, the tractor disengages its mowers and teams up with an MB sweeper to keep skating rinks smooth.

Softening and settling take place in two up-flow basins, each having a capacity of 4 mgd.

Bossier City, La. constructs its own purification plant and becomes the . . .

First City to Use Red River Water

By B. M. FERGUSON*

As far as we know, Bossier City's new water plant is the first one constructed utilizing the Red River as a source of supply. The city's water-improvement program is now complete and in operation, and the finished water is of excellent quality. Operating costs to date are substantially as anticipated.

Early in 1955, the city engaged the writer's firm to study existing water facilities and possible sources of supply and to recommend a course of action to insure a dependable and adequate water system. At that time Bossier City received its water from the City of Shreveport, located just across the Red River.

After studying four possible sources of supply and the merits of continuing to purchase water from Shreveport, we recommended that the city utilize the Red River, construct its own treatment plant and strengthen the distribution system. The city adopted this recommendation and in July 1956 the voters approved a $3,000,000 bond issue to finance this work together with some sewerage improvements. Construction got under way in October 1957 and was completed this spring.

Water Softened

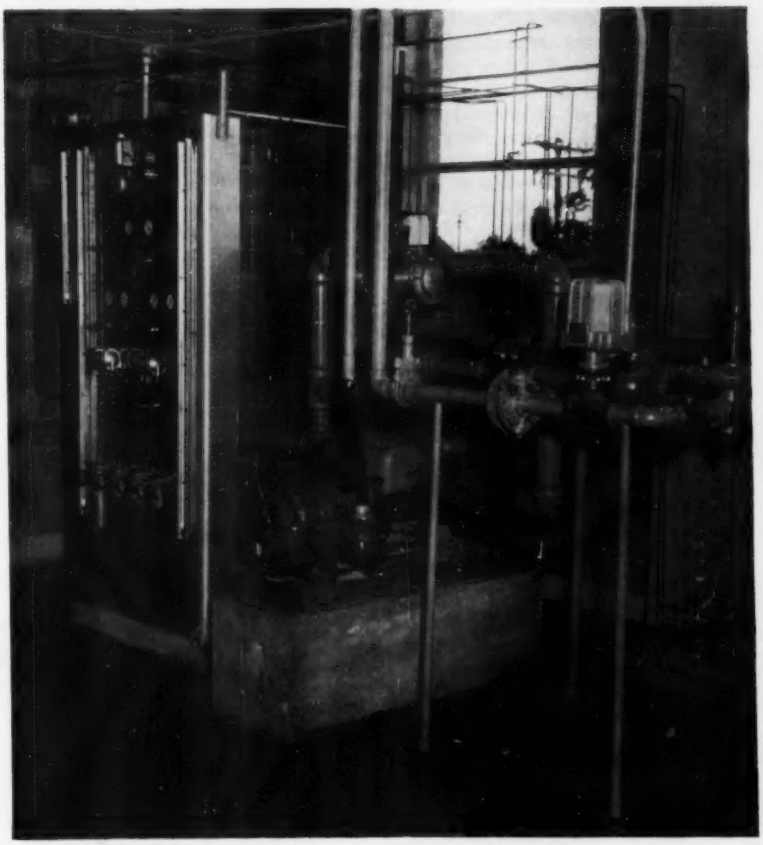
The plant is located at the north edge of the city's "waist" at a convenient bend in the river and is well situated for transmission of finished water to the distribution system. It has good street access and is served by a spur track affording substantial economy in the purchase of chemicals.

The open-type-structure, raw-water intake contains four Layne-Bowler vertical turbine-type pumps driven by General Electric motors. Two units are rated at 4 mgd each and two have a capacity of 2 mgd. They pump raw water from the river channel through about 1,200 feet of 24-inch cast-iron pipe to the treatment plant.

A 24-inch type AV Infilco rate-of-flow controller at the plant entrance provides preset, uniform rates of input to the two 4-mgd Accelator up-flow basins as an aid in maintaining hydraulic balance. The up-flow units are designed to handle raw-water turbidities up to 1,200 ppm and, as a further measure for high turbidities, are installed in "over-sized" basins. They provide a 60-minute detention period at the

* Mr. Ferguson is a member of the firm of Demopulos & Ferguson, consulting engineers of Shreveport, La.

An overall view of the treatment plant showing the main building and the wash-water tank (right) and the high-service pumps, switchgear building and substation (left).



The recarbonation equipment has a capacity of 3,000 pounds of carbon dioxide per day.

maximum design flow of 8 mgd.

After primary treatment in the up-flow basins, including coagulation, softening and sedimentation, the softened water is stabilized in a recarbonation basin having a detention period of four minutes. The Infilco recarbonation equipment has a capacity of 3,000 pounds of CO_2 per day.

Anthracite Media

A 30-inch cast-iron pipe conveys the recarbonated water to the filters. The plant has three 2-mgd filters, fully equipped, and one additional filter, not equipped but available to take care of future needs. Design rate is based on two gallons per square foot per minute.

The filters are equipped with Wagner Transite underdrains with anthracite as the filter media.

The three rate-of-flow controllers

The control center of the Bossier City plant is located in the laboratory room of the main building.

The river intake is located in the river channel, close to the near bank.

are of the venturi type with trumpet-type approach and a butterfly, air-operated control valve mounted in the recovery end. They have a range of control extending from 0.75 to 3 mgd.

Controlled air pressure acting in opposition to a set air pressure corresponding to a desired flow rate activates the units. Any imbalance in these air pressures due to a departure from the set flow rate operates a positioner to restore the flow rate to its set value. Air motors position the butterfly valves, and the rate setter for each controller is located on the operating console of each filter.

Automatic Shut-Offs

Automatic gradual shut-offs prevent draining of filters in case of raw-water failure and also prevent overflow of the clearwell.

The Infilco consoles each control five hydraulic filter valves and have instruments showing loss of head and filter rate-of-flow.

A 100,000-gallon elevated Pittsburgh-Des Moines wash-water tank is filled by a 450-gpm pump taking suction from the clearwell.

Filtered water flows by gravity to a 2-million-gallon clearwell. The four Layne-Bowler vertical turbine type high-service pumps take suction from a sump at one end of the clearwell. Pump ratings are two at 4 mgd and two at 2 mgd. The General Electric motor drivers are mounted in the open on top of the clearwell. A separate building immediately adjacent to the high-service pumps houses the Westinghouse switchgear equipment. The switchgear is sectionalized to reduce the hazard of losing all pumping capacity at one time.

The electric power company constructed a substation adjacent to the plant site which, together with standby service from a separate substation, affords the plant a high degree of reliability of electric service.

The characteristics of the water to be treated vary widely. Generally speaking, when the raw water is highly turbid, it is relatively soft and when the turbidity is low, the hardness is high. Chemicals used include ferrous sulfate for coagulation at the high pH ranges resulting from the softening process; hydrated lime and soda ash for softening; and chlorine for disinfecting.

Feed Equipment

Dry chemical feed equipment consists of five Infilco volumetric feeders as follows:

Chemical	Capacity Pounds/Hour
Hydrated lime (2)	5 to 225 and 200 to 1,400
Soda ash	200 to 1,400
Ferrous sulfate or alum	10 to 300
Auxiliary—(ferrous sulfate, alum or carbon)	10 to 300

These feeders are equipped for variable-rate operation to feed at rates automatically proportioned to raw-water flow, but are capable of manual adjustment.

Chlorination

Both post- and pre-chlorination may be practiced with the following Wallace & Tiernan equipment:

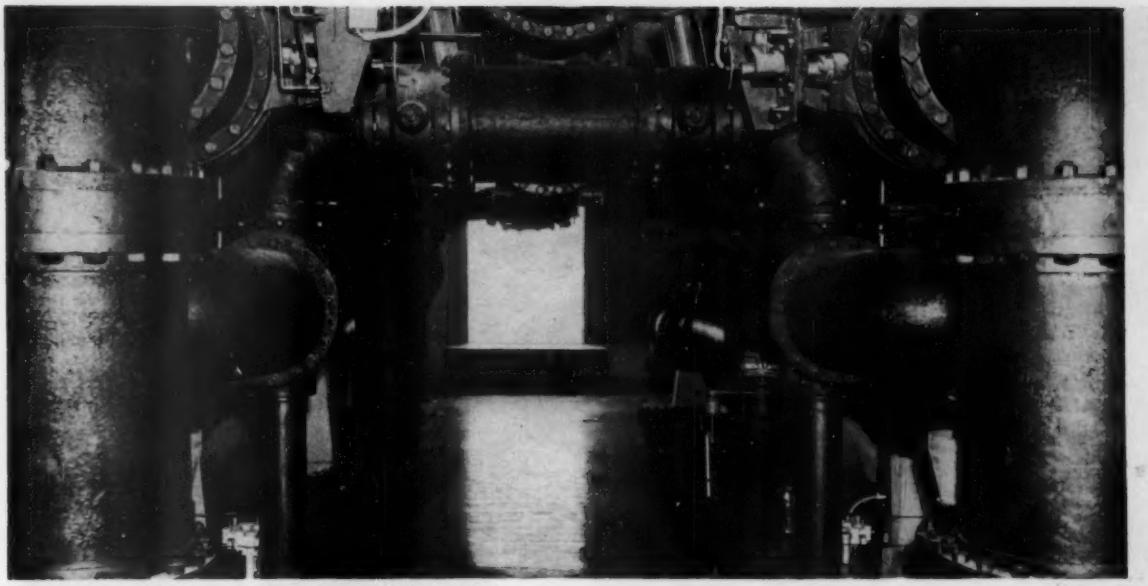
1. One Series A-681 chlorinator of 750-pounds-per-24-hours capacity with automatic proportional control.

2. One Series A-637 Silactor of 160-gpd capacity. Two Milton Roy proportioning pumps deliver the chlorine-activated silica sol to the Accelator units. The silactor is suitable for use as a straight chlorinator by shutting off the sodium-silicate feeder.

The Fairbanks-Morse beam and dial scales are pit mounted on the chlorine loading dock and have platforms 60 inches by 48 inches in size.

The application of activated silica during certain periods of high turbidity aids in the coagulation of the very fine particles of suspended matter which are present at those times.

The raw-water flow controller, located ahead of the upflow basins along with a proportioner actuator and flow meter, has a control range of 2,100 to 8,400 gpm. It is equipped with a remote rate setter, located in the plant control center, and an automatic gradual shut-off device governed by the recarbonation basin water level over a range of



The two-story-filter section permits the pipe gallery to be placed on the ground floor.

9 inches. The controller permits full flow at water level, which is 18 inches below the top of the basin wall, and gradually closes the control valve as the water level rises until it is completely shut off at a level of 9 inches below the top of the wall.

The Builders-Providence proportioner actuator controls the chemical feeders, chlorinators, flow meter, and accelator sludge blowoff timers in direct proportion to the raw-water flow. The indicating, recording and totalizing flow meter is panel mounted in the plant control center.

The Builders-Providence control panel, located in the laboratory room of the main building, contains various indicating and recording instruments as follows:

1. **High-service and raw-water meters**
2. **Wash-water tank, clearwell, and elevated tank level gauges**
3. **Pump controls for raw-water and high-service pumps**
4. **Alarm light, bell and silencer, buttons for clearwell, wash-water tank, elevated tank, and master rate alarm**
5. **Space for two future instruments**

The high service meter consists of a Dall flow tube, flow transmitter, and totalizing, indicating, recording receiver. The flow tube has a maximum capacity of 12 mgd at a differential of 60 inches of water.

The clearwell level gauge includes a circular chart recorder, adjustable high and low level alarm contacts to actuate alarm lights and bells, and sufficient contact switches for automatic control of the raw water pumps.

The center section of the main building is a three-story structure with office space, maintenance, mechanical equipment, public toilet facilities, chlorination equipment, chlorine handling and dock loading facilities on the first floor; chemical feeding, laboratory facilities, control center and toilet facilities on the second floor; and chemical storage and charging on the third floor. A 5,000-pound-capacity elevator provides easy transfer of materials to the various floors. This center section is flanked by the filter wing on one side and by the influent well, up-flow units and recarbonation basin, all attached, on the other side.

The underground clearwell, high-service pumping, switchgear building and elevated wash-water tank are located near the main building.

The writer's firm prepared the plans and specifications and also supervised construction. Southern Builders, Inc. of Shreveport served as the general contractor. The total plant construction cost came to $1,173,261. Operation is under the jurisdiction of C. W. Fowler, the utilities commissioner for the city.

The city did not have an integrated distribution system but rather a combination of disconnected small individual systems receiving their supply by the most expedient means available. In this case the supply meant connections to the 20-inch and 12-inch lines from Shreveport. Except for these two lines plus one other 12-inch main, the system comprised mains of 8 inches, 6 inches or 4 inches in size. Some of the older subdivisions had lines as small as 1½ inches in diameter.

To rectify this condition, the improvement program included installation of a 30-inch supply main about 600 feet long, about 3,600 feet of 20-inch main, 9,000 feet of 18-inch main, 13,300 feet of 16-inch main and 26,700 feet of 12-inch main and miscellaneous 8-inch and 6-inch lines to tie in the system. In addition, an elevated tank of 1,500,000 gallons was constructed by the Chicago Bridge & Iron Company since the city had no storage facilities which would enable it to take care of emergencies or peak load conditions.

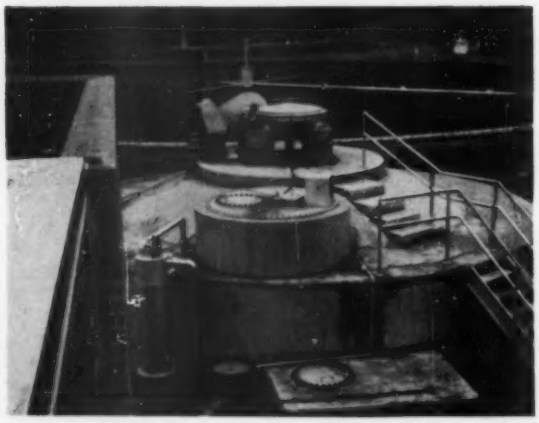
Plans for the Future

Future plans call for additional mains and storage capacity. Plant capacity can be increased from 6 mgd to 8 mgd by equipping the fourth filter. This should be sufficient for some time, for our estimates predict a 1987 yearly average use of 5.2 mgd and a maximum daily use of 10.4 mgd.

Plans to grind garbage at a large institution contributing to the Lincoln, Ill. sewage treatment plant made a new approach to the design necessary.

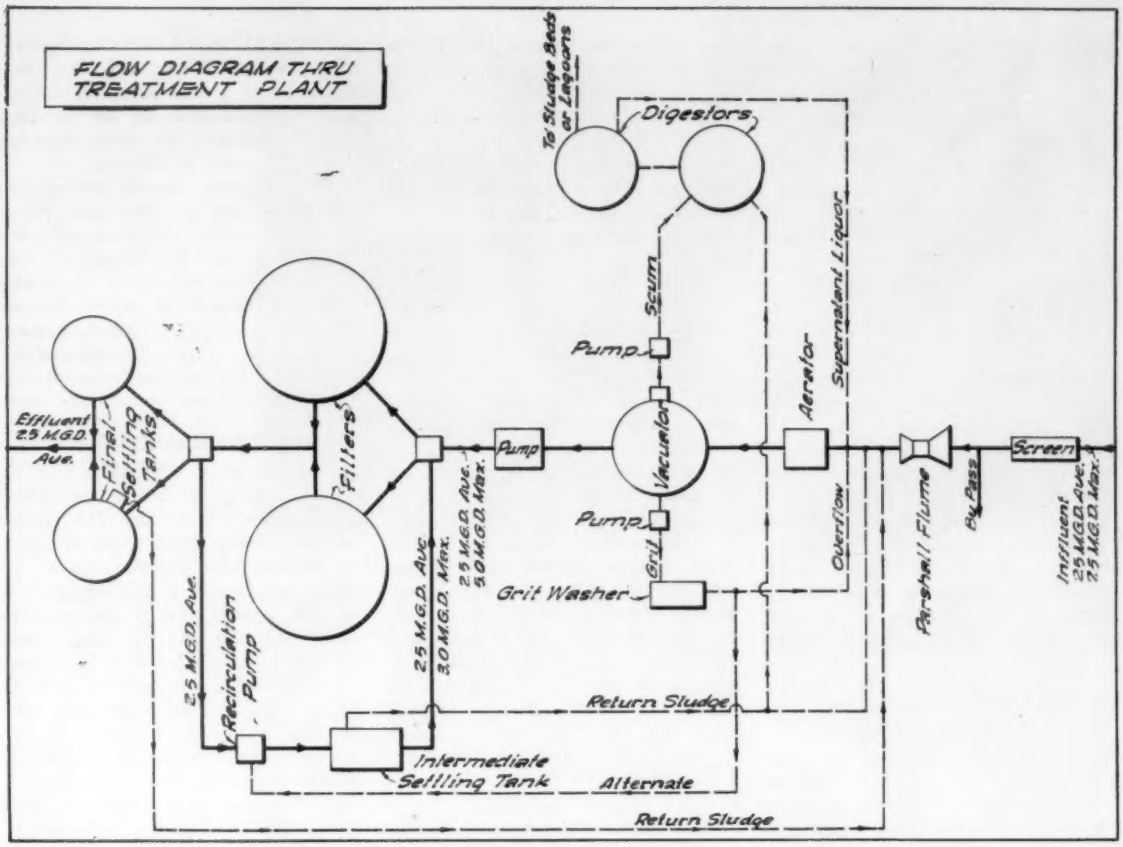
Ground Garbage Won't Trouble This Plant

Lincoln, Ill. sewage purification plant makes thrifty, resourceful design revisions to be able to receive an unusually heavy load of ground food wastes



A vacuum flotation unit replaced the original settling tanks as a primary treatment facility.

This grit-washing machine is part of the improved grit-removing system.



Flow diagram, showing how the Vacuator is used as a primary treatment unit and the original settling tanks as an intermediate unit.

By **C. L. RITCHIE***

The decision to grind all garbage at the Lincoln State School and Colony resulted in a revised design for improvements to the Lincoln, Ill. sewage treatment plant. Plans for the improvements had already been made; the proposal for garbage grinding made a new approach necessary.

The Lincoln plant, constructed in 1936, serves the State Mental Institution with its 5,000 patients, along with residents of the city, a small college, and several industries. One of these industries, a poultry plant operated by Armour and Company, kills some 20,000 chickens daily, discharging the wastes to the city sewer.

The original plant was designed by our engineers to receive wastes from a population of 15,000 persons. It consisted of a mechanically cleaned screen, grit channel, raw sewage pumping, primary settling, trickling filters, secondary settling and two digesters. Improvements made in 1953, considered only as "stop-gap" measures, added a Dorr-Oliver mechanical mixer in the primary, fixed-cover digester, and reaction-type filter distributors in place of the original motor-driven units. At the time we also improved the hydraulic capacity within parts of the plant.

Using the results of a sampling survey conducted in 1954 and considering the institutional garbage and industrial load, we decided the plant capacity should be increased to serve a city population of 22,800 persons.

However, because of the increased sewage strength, this resulted in design on a BOD basis for a population equivalent of 45,800 persons and design on a suspended solids basis for a population equivalent to 40,100 persons. The average design flow selected is 2.5-mgd with a maximum flow of 7.5-mgd through the primary units.

The mental institution was already a heavy grease contributor and we anticipated that this problem would become more acute once it started grinding garbage. Those who had seen the grit removed from the digesters just a short time before plans for improvements were initiated could attest to the need for improved grit removal. Much of the sewer system is combined.

To overcome these problems, we utilized a Dorrco Vacuator for primary treatment and converted the primary settling tanks to intermediate tanks. In the new closed tank with dome-shaped top, a vacuum is applied to previously mechanically aerated sewage, bringing the sludge or scum to the surface. A rotating collector sweeps this scum into a V-trough draining to a vacuum-tight sump. Gritty material settles to the tank floor, is scraped to a grit pocket and then conveyed to a walking-beam type grit washer for removal of organic material.

The Vacuator has certain im-

* Mr. Ritchie is on the staff of Crawford, Murphy & Tilly, consulting engineers, 755 South Grand Avenue, West, Springfield, Ill. As sanitary engineer, he was responsible for the design and supervision of construction of the current sewerage program.

portant points in its favor. Primarily it has the ability to remove grease and other floating material to be expected from garbage. It also reduces digester capacity required because sludge of lower water content can be pumped to the digesters. We also feel that the unit is capable of reducing substantially the BOD of raw sewage.

Either of two positive displacement pumps may be used for pumping Vacuator scum or grit with discharge to the digester or grit washer, depending upon the material being pumped. A bubble-type control, allowing a small amount of air to bubble from the atmosphere into the vacuum scum pit, controls the scum pump.

Plant personnel can, in a matter of minutes, bypass the Vacuator, and use the original units only, merely by changing two valves, changing the position of a stop gate, and switching a few electrical controls.

Unusual Features

Hydraulic studies indicated a 5-mgd maximum capacity for the filter underdrain and collection trough system. Thus it became necessary either to limit recirculation or reconstruct the underdrains, the cost of which appeared unwarranted.

A programming-type float control at the raw-sewage metering flume solved the recirculation problem. As raw-sewage flow increases, there remains less recirculation capacity in the filter underdrains. The control starts and stops the Byron Jackson filter effluent recirculation pumps inversely as the raw-sewage flow varies. Present recirculation range is from zero to 3.2 mgd. A simple dam diverts filter effluent to the recirculation pumps so that recirculation control is effected entirely by the control at the Parshall flume.

Limited head and space problems led to the installation of a vacuum priming unit for the American Well Works and Aurora Pump Company settled-sewage (formerly raw-sewage) pumps. Following consultation with priming-unit manufacturers, we decided that priming could best be accomplished by means of a vacuum tank fastened to the pump-room wall above the pumps. A float switch mounted in the vacuum tank controls the priming-unit vacuum pump. Thus, the effective water level in the pump suction lines is maintained well above the pump bowls at all times and the nuisance of clogged priming valves is avoided. To our knowledge, this priming unit, supplied by the Nash Engineering Company, is the only one of its kind. Its operation is entirely satisfactory.

Other plant improvements include installation of a new Chain Belt mechanically cleaned screen, a Dorr-Oliver spiral heat exchanger, a new final settling tank and sludge lagoons. Also included was the replacement of the top two feet of filter media.

These improvements were made along with sewer extensions comprising a $1,350,000 overall program. The plant work cost $187,920; construction of a new pumping station and improvements at an existing station brought the total amount of this contract to $251,624.

This program started during the administration of the late Alois Feldman, with Alderman Charles Williamson as Chairman of the Sewage Treatment Plant Committee, and completed under Mayor Edward L. Spellman and Alderman Paul Engle. Plant Superintendent Lawrence Arthur has been on the job 18 years.

Surcharge Established

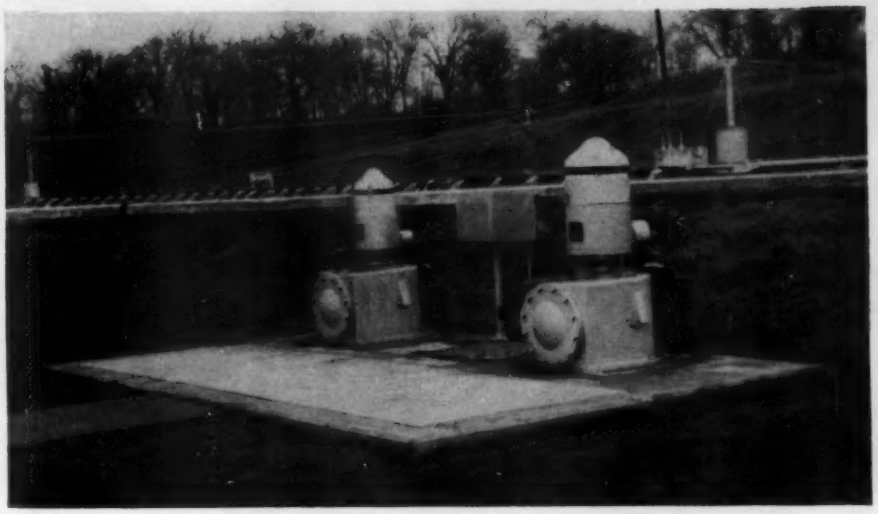
A sewer service charge, now in effect, applies a sliding scale depending on water use for sewer service where the sewage strength is normal, and a surcharge of ¾ cents per pound of BOD in excess of 200 pounds per million pounds of sewage and one cent per pound for all suspended solids in excess of 240 pounds per million pounds of sewage. This surcharge was deemed advisable because of the substantial difference in strength of ordinary sewage and that originating from the state institution and the industrial sources. Our engineers' recommendations for a system of surcharges, based on a detailed study of the cost of treatment, were incorporated in the rate ordinance and formed a basis for a contract between the city and the state for services to the state institution.

Data is currently being gathered

LINCOLN, ILLINOIS SEWAGE TREATMENT PLANT
Analytical Results of Sampling—1958

	BOD ppm				Suspended Solids ppm			
Month	Raw	Primary Eff.	% Reduction	Final Eff.	Raw	Prim. Eff.	% Reduction	Final Eff.
Jan.	154	114	26	17	236	168	29	126
Feb.	165	120	27	19	201	147	27	96
March	211	164	22	24	213	152	29	81
April	211	166	22	21	379	255	33	74
May	229	181	21	18	420	304	28	68
June	211	167	21	17	349	233	33	60
July	196	156	20	19	267	148	45	62
Aug.	178	141	21	16	288	187	35	63
Sept.	205	159	26	17	258	136	46	60
Oct.	165	132	20	17	282	147	48	77
Nov.	216	165	25	16	310	240	23	28
Dec.	205	167	19	20	...	...	...	...
Average	195	152	22	18	267	176	34	66

Average overall reduction in BOD—91%
Values are monthly averages



Because of limited filter-underdrain capacity, a control in the raw-sewage flume starts and stops these recirculation pumps inversely as the sewage flow varies.

on sewage strength at the institution and the poultry plant. Pre-design sampling, taken prior to the installation of garbage grinders, indicated a BOD of 274 ppm and 255 ppm of suspended solids at the institution and 880 ppm BOD and 360 ppm suspended solids at the poultry plant. The discharge of blood to the sewers clearly influenced the strength of sewage from the poultry plant.

The new units were completed and placed in operation in December 1957. During all of 1958, operating personnel followed their established routine of collecting samples of raw sewage, primary (Vacuator) effluent, and final effluent every hour and compositing them for analysis in the plant laboratory. The results of those analyses are shown in the table on the opposite page.

The BOD removal through the Vacuator ranged from 19% to 27% during the year and averaged 22%, while at the same time suspended solids removal averaged 34%. The filters did a good job of further reducing BOD to an average of 18 ppm in the final effluent. This compares with an effluent quality of 50 parts per million at ultimate loading considered in design. While difficulty with flow measurement during part of the year precludes any precise analysis of the plant loading during this period, we estimate loading ranged from 60% to 70% of the design loading.

Solids Content

Sampling of the sludge of scum pumped from the Vacuator to the digester on several occasions showed the representative average solids content to be 3.63% as compared to 5.0% anticipated in the design. Observation of the Vacuator in operation, however, indicates the solids would be much greater if we did not use clear water to flush the scum from its receiving trough into the scum pit. The manufacturer of this equipment is cooperating in working out modifications which will undoubtedly accomplish the desired results.

When construction of the treatment-plant improvements were virtually completed, the state proceeded with installation of the garbage grinders.

At the present time approximately 60% of the meals at the institution are prepared in the kitchens having grinders. The treatment plant, with its improvement designed with the garbage and industrial load in mind, is set to meet the future and do its part in keeping the nation's streams clean.

Airports Seldom Downgrade Property Values

Airports usually prove to be good neighbors and do not depress land values. At the meeting of the National Association of Real Estate Boards held in Chicago recently, H. O. Walther, a past president of the American Institute of Real Estate Appraisers, made public the results of a survey of residents and property owners near airports of six cities: Chicago, Los Angeles, Denver, Dallas, Newark and New York City.

Generally speaking, he asserted, municipal airports do not have an adverse effect on the market value of real estate. Property values in the area near one airport where jet trainer planes are in use have not been affected.

He cited these instances to support his statement:

1. Over 800 double transactions revealed that the market behavior is about the same in airport areas as in other areas.

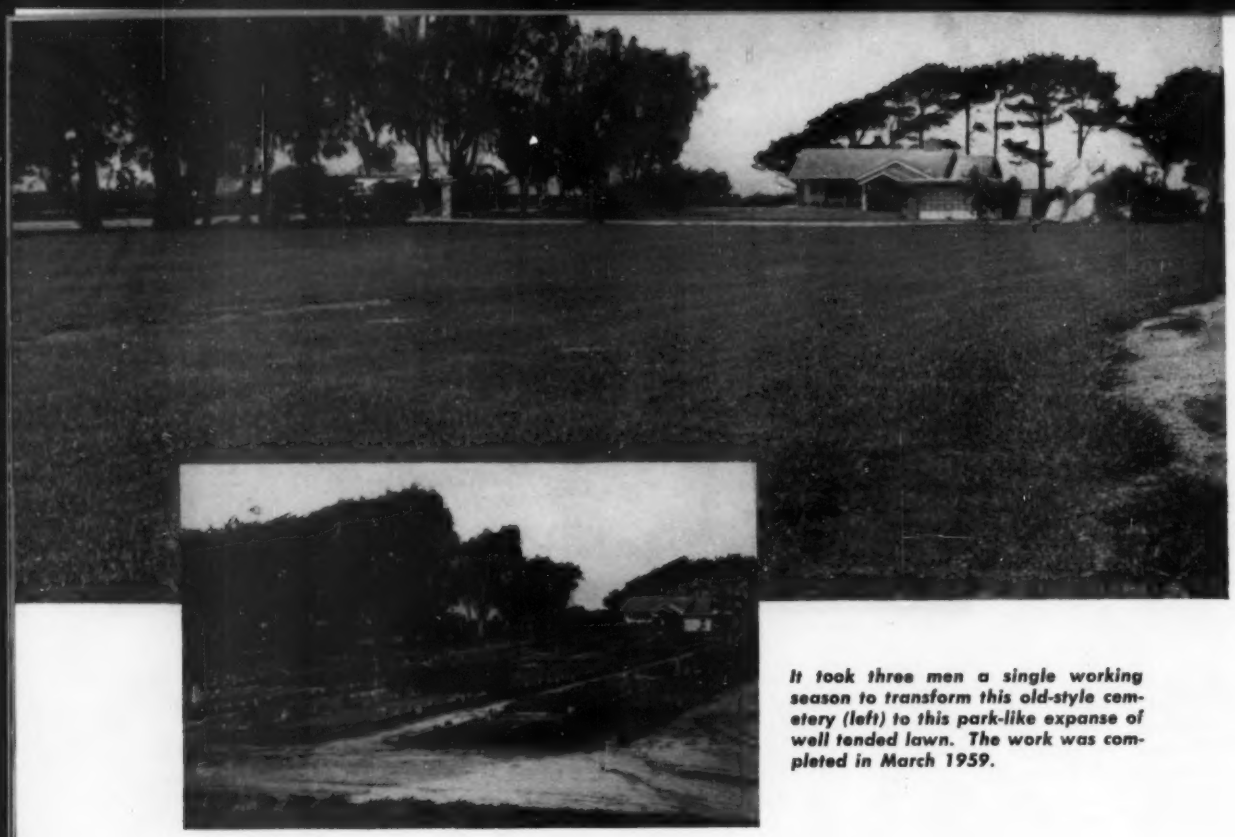
2. More than 30,000 buildings—nearly all of them homes—have been built within a mile of the six airports studied during a 12-year period after 1940.

3. The number of properties for sale in airport areas was less than in comparable areas.

4. Airport areas which included homes were in good condition with better-than-average maintenance.

5. Trade opinion of real estate brokers active in the areas showed without exception that airports had not influenced the value of homes adversely.

These studies, he concluded, did not suggest that noise, interference with TV reception, and anxiety were non-existent in areas adjacent to airports. But their effect was minimized by advantages such as: excellent transportation, increased demand for housing because of new industries, and more job opportunities.



It took three men a single working season to transform this old-style cemetery (left) to this park-like expanse of well tended lawn. The work was completed in March 1959.

Cemetery Revamped by City Forces

Pacific Grove, Calif., demonstrates that remodeling a cemetery meets only mild opposition if handled with consideration

By **R. H. SULLIVAN***

When the City of Pacific Grove, Calif., assumed ownership and responsibility for El Carmelo Cemetery, officials there accepted the operational task with some misgivings. The cemetery is an old one, founded, owned and operated, until recently, by the Methodist Church, by whose members the city itself was originally settled. City officials knew that solving the problems of maintenance would be difficult.

Approximately one-half of the cemetery originally was laid out with driveways between each set of two rows of graves. Individual plots were marked with upright stones of every type, size and shape, and each plot was outlined by concrete coping. The general appearance was one of sad disorder, similar to that of most older cemeteries across the country. But in addition, with only limited funds available from the church's perpetual care fund and from budgeted cemetery operating funds, many of the older sections were relatively untended.

After intensive investigation and inspection of facilities, Al Coons, then city manager, and his staff could recommend only one solution to the problem.

It was decided that, in order to provide better care for all graves, provide additional interment sites and reduce maintenance costs, full-scale remodeling of the older sections was necessary. A new set of rules and regulations for future operations also would have to be drawn up. Consideration and diplomacy were recognized as the primary functions in launching the project. To carry forward even the most superficial operations, these functions were the key to informing the public and administering any portion of the remodeling project.

First came the plan of action. Taking the oldest section of the cemetery as a demonstration area, the city decided to:

1) remove all concrete copings,

2) embed all marker stones face up with the inscription surfaces at pre-set grade level,

3) install a water sprinkling system,

4) remove surface vaults, where possible, and

5) grade and seed the entire area and maintain it as a memorial park.

* Mr. Sullivan was formerly Director of Public Works in Pacific Grove, Calif. He is now Administrative Assistant in the Phoenix, Ariz. Department of Public Works.

The plan assured creation of 700 new sites in the pilot section in addition to 1,369 sites that were contained at the time of transfer to city operation. Proceeds from the sale of the additional sites were to be set aside to provide for remodeling operations and for perpetual care.

The second and most delicate task now confronted the staff. The public at large and families of those interred, as well as owners of unused sites, were, of course, entitled to know what plans had been laid for changing the appearance —it might even be said the atmosphere —of the cemetery.

Initially, letters were sent to those directly interested, explaining operations as planned, describing the aesthetic value of completed work and pointing up economies through provision of better care for all graves, availability of additional sites and reduction in annual maintenance cost to the city. The letters notified all that protests could be made and that perpetual care could be purchased at any time for their sites. These letters were followed by general announcements to the public.

Evidence that proper handling of this type of community interest campaigning can be effective was demonstrated in the weeks that followed the initial mailing. Only a fraction of anticipated protests materialized and the majority of owners were in favor of the program.

The city council ordered the remodeling work to proceed in small segments. The size of each segment of work was determined by the amount of production that could be handled by the city's equipment and by a crew of three city employees.

Remodeling of the first 1,369-grave section was started in June 1958. This section and an additional 384-site portion of the cemetery, which has not been opened for public use, were completed in March 1959. With its completion, not only had previous objectors become firm advocates, but owners and relatives of occupants of sites in unimproved sections began to urge that their sections be remodeled as rapidly as possible.

Public cooperation went to the point of voluntary granting of permission for some of the larger stones to be cut so that only a slab marker was buried flush with the ground. This was necessitated in many cases by older burials that were too near the surface. In these sites large stone markers could not have been reset without lowering the vaults. As it was, some vaults had to be lowered, because sod above them was too shallow to support grass growth.

Workmen were assisted in the remodeling job by a 2-yard Chrevolet truck and a 105-cfm Remington compressor (above) and left the heavy muscle work of the project to a newly purchased Michigan Model 55-A front-end loader (right).

Costs

Cost of the work on the initial section, excluding equipment rental for city-owned equipment, was $9,531.85. This money was loaned to the cemetery fund from the general fund reserve of the city. The summary of expenses is as follows:

Labor	**$3,387.32**
Equipment rental (private)	**1,304.68**
Watering system (labor and material)	**2,889.54**
Equipment purchases for project	**304.26**
Surveying (by contract)	**194.75**
Miscellaneous	**1,451.30**
Total	**$9,531.85**

The amount will be repaid to the city from the sale of newly created sites. The charge for each existing site that was unsold at the time of transfer is $120, of which $30 ordinarily goes into the perpetual care reserve fund and the remaining $90 is added to the cemetery operating fund.

New sites are sold for the same price, but $45 is allocated to debt repayment, $30 goes into the perpetual care reserve fund and the remaining $45 is used for the operating budget. The annual number of burials has increased during recent years from 80 per year to 120 per year.

The second section worked upon was started in July 1959. This section has 540 sites, of which 36 are not presently sold and 172 are privately owned but not yet in use. Present work will create 180 new sites and the total year's project will cost approximately $6,000, a higher unit cost than in the initial section because of the larger markers to be handled.

Disposal of discarded concrete copings created no problem. A notice in the local newspaper announced that all concrete blocks were being made available to the public at no charge, with transportation supplied by the recipient. All such copings have been removed from the cemetery by the public without incident.

Most of the work has been accomplished by a 3-man crew. Two men were hired for the summer to assist the third, who is a regular, city-employed equipment operator, for whom a temporary replacement was hired. The equipment used consists of one 105-cfm Remington air compressor, one 2-yard Chevrolet dump truck, and one Michigan Model 55A front-end loader.

Scranton, Pa. finds rock salt indispensable in maintaining . . .

Safe Winter Roads at Reasonable Cost

By JOHN WASHO*

Four years ago the National Municipal League and *Look Magazine* presented an "All America City" award to Scranton for its successful industrial development program. This city of 130,000 people is still working hard to attract industry to replace the almost overnight loss of our anthracite industry and our streets represent an important asset. We find that rock salt is an indispensable part of our winter mainteance program not only to keep the streets open to traffic, but to keep them safe as well.

Scranton has 306 miles of streets, including 29.05 miles of state highways maintained by our crews during the winter. The city is situated in a valley with several neighboring cities located on the hills on either side. Steep hills and bridges mark our major streets throughout the city and create special winter maintenance problems.

With our difficult street problems and limited funds, we don't boast having the best winter road maintenance program but it is good and is improving every year. Each year we provide more bare street mileage, no matter how severe the weather.

Rock salt is not new to Scranton, for we used it as far back as 1925, and it proved successful even with hand-spreading methods and lack of experience. But traffic in those days did not demand the attention it does today and somewhere along the line we dropped the ball and went over to cinders. These we obtained merely by hauling them away from a local steam-heating company.

It wasn't until the late 1940's that we started to give rock salt the place it should have in our winter maintenance program. In 1950 we used about 300 tons and last year we used between 700 and 800 tons. Although we still use some cinders, the amount becomes less and less each year, with rock salt not only taking their place but doing a much better job.

Timing is important and our entire program is organized to speed spreading operations in those important first few minutes of a storm. Getting the material down before the pavements become slippery usually solves the problem right in the beginning.

Advance warnings often let us get the jump on a storm. We keep twice-daily contact with the weather bureau at the Avoca-Scranton airport and increase the frequency of contacts whenever storms are pending.

Several trucks are always kept loaded and ready to go on a moment's notice. We can cover 42 miles of top priority roads, including the state highways, in the first hour — a tremendous improvement over the old cinder days.

Our men, too, are always ready to jump to their bare-pavement maintenance jobs. There is no question concerning duties, for everything has been carefully worked out in advance. Each man understands his own job and has written information so that he can take over for another man if necessary.

The mid-city maintenance garage serves as the nerve center for the

* Mr. Washo is Director of Public Works in Scranton, Pa.

With this combination of plows (left) and spreaders (right), Scranton does a good job of keeping streets summer-safe all winter long.

Rock salt, stored in an old garage, is loaded into one of the spreader-equipped trucks . . .

. . . and is applied to the streets as soon as possible after a storm begins . . .

. . . so that it can go to work (left) as the snow continues to fall . . .

. . . resulting in bare pavements soon after the storm ends (right).

entire snow and ice control operation. Here we keep all equipment and store both cinders and rock salt. The cinders are trucked from a few blocks away to a storage pile in the garage yard. Salt, shipped from International Salt Company's Retsof mine in 40-ton box-car lots, is stored in an old garage within the yard. An Allis-Chalmers front-end loader shuttles between the rock salt and cinder piles in a few seconds.

Our bare-pavement program received a big boost last year through the purchase of two Flink tailgate spreaders and two Tarco Scotchman spreaders. These are mounted on Ford two-yard dump trucks also equipped with Root Spring clip-on plows. This past spring we purchased three two-yard International dump trucks on which we will put salt spreaders. This has permitted the retirement of two old units.

Additional equipment includes three Dodge two-yard dump trucks and four Federal garbage trucks, all rigged for plows, and an old 1½-ton Dodge truck used to hand-spread rock salt on bridges, intersections, and other vital points. Two patrol graders, an Austin Western and an Adams, complete our plowing equipment. For snow loading we use a Barber Greene, two Nelsons and an Allis-Chalmers front-end loader with 1¼-yard bucket.

Procedure

The city is divided into six sections, with each street within a section rated on a priority basis. The foreman on duty during a storm receives reports from his drivers as they return for reloading and makes whatever operational adjustments are necessary. We rotate our five sectional foremen so that a different man is in charge every night.

We have tried many types of mixtures, but find that straight rock salt is best—being fast, more effective, easier on equipment and, in the end, less expensive than any other material or mixture.

When the temperature drops below 15°, we add a bag or two of calcium chloride to each truck load of salt. Even when the temperature is low, salt serves well. It provides traction at the low temperatures and goes to work as soon as the temperature starts to rise.

We would prefer to use more salt than seems necessary rather than go back a second time. Generally about 500 pounds per mile does a good job. At this rate our trucks cover approximately seven miles of streets per load.

Now that we use salt extensively, we do not bother with parked vehicles in the commercial area unless the snow gets so deep that actual removal become necessary. When this happens special no-parking signs are placed on the parking meters and the people are notified through the two daily papers and local radio and television stations. The few parked cars that still remain are towed away by city tow trucks so that loading operations can proceed.

Our final goal is to maintain summer-safe streets all winter long, and we're fairly close to that goal now.

How to Prepare the Council Agenda

A council agenda provides an orderly plan for a council meeting. The city clerk, city manager, or some other municipal administrator is in the best position to determine the agenda that must be considered by the city council for legislative action.

Preferably, the council agenda should be prepared in advance of the council meeting. If the meeting falls on a Tuesday the agenda might well be prepared on the previous Thursday, then mimeographed and distributed to all councilmen and other necessary officials on Friday. This gives the councilmen an opportunity to review each section of the agenda during the weekend. Any questions can be taken up informally on Monday before the meeting.

Preferably, the council agenda should consist of four sections:

1—Referred Matters
2—Deferred Matters
3—Administrative Reports
4—New Business

The *Referred Matters* section pertains to important items which have been referred to the presiding city administrator for his consideration and action at a previous meeting. Each referred item should be summarized in the title in capital letters and arranged in numerical order. Data following the title should be clearly stated to show what action has taken place. Careful consideration should be given to dates, costs, vital statistics and persons involved.

The *Deferred Matters* section concerns those items which have been previously set aside for council or administrative consideration because of one reason or another. Again, the items should be summarized in the title and set forth in capital letters.

The *Administrative Reports* section may or may not be included in the agenda depending upon the circumstances or the time. This section usually includes a short report to the council on matters which the council ordinarily would not consider but which may be of interest to the members.

The *New Business* section sets forth new proposals for council consideration. The same form should be used throughout the agenda. No attempt should be made in this section to debate a particular issue. Supporting data, however, should be included to give the council a summary of any one of the new items. Emphasis here is on presenting the problems for council action and discussion. Basic facts are of course needed so that the proposal can be intelligently reviewed by the members.

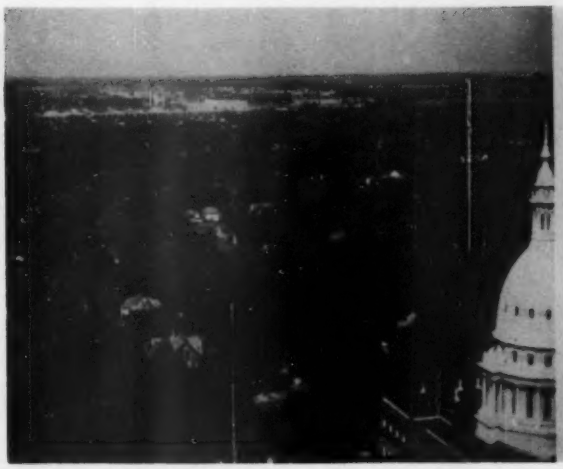
JOHN C. BUECHNER, *Instructor*
School of Public Administration
Florida State University

$93,000 From Sewer Sludge

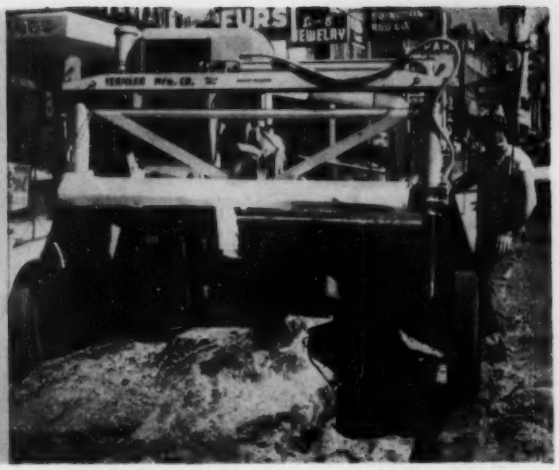
In the past nine fiscal years the Phoenix, Ariz. City Treasury received $92,960 from the sale of air-dried sewage sludge. Of this $45,509, or 48.9% was collected in the past three years, July 1956 through June 1959.

Revenue from air-dried sludge should increase still more during the next three years. The city council recently awarded a three-year contract for the sale of sludge at $4.16 per ton, an increase of $1.04 per ton received over the past three years.

In addition, the new contract calls for the sale of sludge from the new 91st Avenue sewage treatment plant constructed jointly by the cities of Phoenix and Glendale. Under the terms of the construction agreement, Glendale will be reimbursed from the sale of air-dried sludge in proportion to its contribution.



Lansing is known as "a city in a forest." This picture taken from the center of town, shows why.



Since a 5,000-volt cable was under the stump, the forestry crew sliced it away with this Vermeer stump cutter.

A City Needs Forestry Know-How

By T. J. HASKELL*

Lansing, the state capital of Michigan, is a city with a population of 107,000 residents and 35,000 street trees. These street trees have been under the care of a professional forester since 1915 and the many benefits of a long-range tree program can be clearly seen in the operation of the Forestry Division of the park department. Operating under the Park Board, the programs of rotation - trimming, systematic planting, and selective tree removal have provided pleasantly shaded streets and parks for Lansing residents for over 44 years.

The 35,000 street trees include 80 species and varieties from the ailanthus to the willow. There are trees from the native woodland of the area; oaks, walnuts, elms and hard maples, and trees planted by early subdividers: sugar maples, silver maples, box elders and many ornamentals.

Planting

In addition to the original plantings of the city, there has been a city-wide planting program since 1930. Under this program, trees are planted wherever there is room on designated streets. The program is expanded every year to include newly designated streets as funds permit. Both original and maintenance plantings are covered by general funds and there is no special charge to the property owner.

There is a growing interest among tree men in using tree selections that are best suited to the site where they are to be planted. The long-range aim is to have the street plantings so diversified that they not only adapt well to the site requirements, but that any outbreaks of disease or insect pests will be checked within these small compartments rather than be allowed to sweep through an entire section of the city. Toward this goal, there are 27 species and varieties of trees on trial in the nursery and on the streets.

Each year, we inspect and trim about 4,000 trees under our scheduled rotation-trimming program. Such a schedule covers the city in eight years. There is no other "spot" trimming done by the city crews except for dangerous deadwood and such trimming as may be requested by the traffic engineer to clear stop signs and traffic signals. Trees requiring special repair or further tree care are referred to the service crew.

Special tree care operations include aerating and fertilizing, bracing, removal of girdling roots, special watering, spraying for control of disease and insects, research and treatment of trees for chlorosis, elm bark disease, wetwood, blossom control for prevention of undesirable fruit, spraying and sanitation for control of Dutch Elm disease.

Departmental crews remove about 500 trees each year. Trees are removed at city expense if they are in poor condition, are a poor species, or are crowded or in an otherwise poor location. This policy, together with our planting policy, has resulted in a gradual increase in quality of the tree population of Lansing. Stumps are removed by a Vermeer stump cutter in many locations although the axe, wedge and sledge are still used in difficult and restricted locations.

Street Widening

Street widening often requires removal of many established street trees. We have been using a Michigan loader, with bucket removed and a special hitch, to move many such trees—up to 6" in diameter—from the proposed widening into our parks. This has proved to be a quick, cheap method of moving trees.

In addition to regular forestry operations, tree crews maintain floodlights on park ballfields, ice rinks and coasting hills, help with the build-up of ice rinks, and decorate the municipal Christmas tree. In return, park and golf course men are used during the winter months to haul brush, wood and logs and help remove stumps.

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* Mr. Haskell is the Chief Forester of the City of Lansing, Mich.

The new plant, located on the outskirts of town, houses three Fairbanks-Morse engines on the first floor with the accessory equipment placed in the basement.

Brand New Power Era for Thibodaux

Town starts second 60 years of power generation with an all-new, three-engine plant, saves 43% on fuel costs—old plant remains as a standby for the new 6,000-kw station

By **LEONARD J. TOUPS***

Thibodaux, La. has made a brand new start on its second 60 years of municipal power generation. The all-new plant, powered by three 2,800-horsepower Fairbanks-Morse 2-cycle dual-fuel engines, in its first year of full-time operation, reduced fuel costs 2.53 mills per kilowatt-hour.

When, in 1955, demands on the old plant were rapidly approaching its 2,945-kw capacity, city officials called in Barnard and Burk, Baton Rouge consulting engineers, to make a survey and recommendations for expanding existing facilities. Their recommendations called for bold action—abandon the plant and build a new one.

The old plant had grown where it started—right in the heart of town—with periodic expansion of what was originally a small, steam-generating plant installed in 1898. Across the street are a hotel, school, administrative offices and court house. Adjacent are the city hall and town park. A new addition could have been built only at the sacrifice of park grounds. As economical expansion was out, a recommendation for construction of a new plant on the outskirts of town and retention of the existing plant as a standby for peak demands was considered. Officials of the city were aware of the problems of installation of new power equipment in the old building. The latest engine—the oldest is vintage 1917—was added to the old plant in 1949 and at that time, the only way that noise was held to the required 90- to 92-decibel maximum was by its complete encasement, from turbocharger to flywheel, in an acoustic hood. Additional equipment would compound the sound problem and satisfy the demand for power for only a short time anyway.

The Bold Step

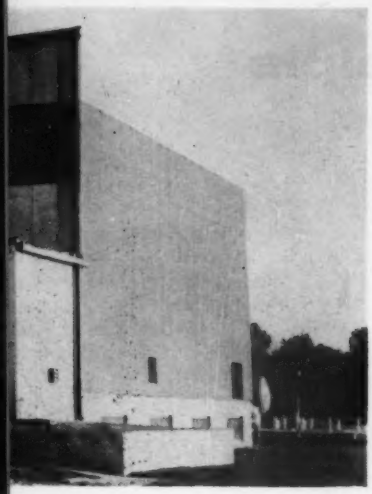
So the officials went to work on the basis of recommended procedures. By spring of 1958, tests of the newly constructed plant by Barnard and Burk showed that the town is getting all it paid for—and more. The three Fairbanks-Morse & Co. units are 8-cylinder (18-inch bore and 27-inch stroke), 2,000 kw, Model 31AD18 dual-fuel engines that develop 2,800 hp at 277 rpm. The choice went to 2-cycle units because of their simplicity and record of long engine life.

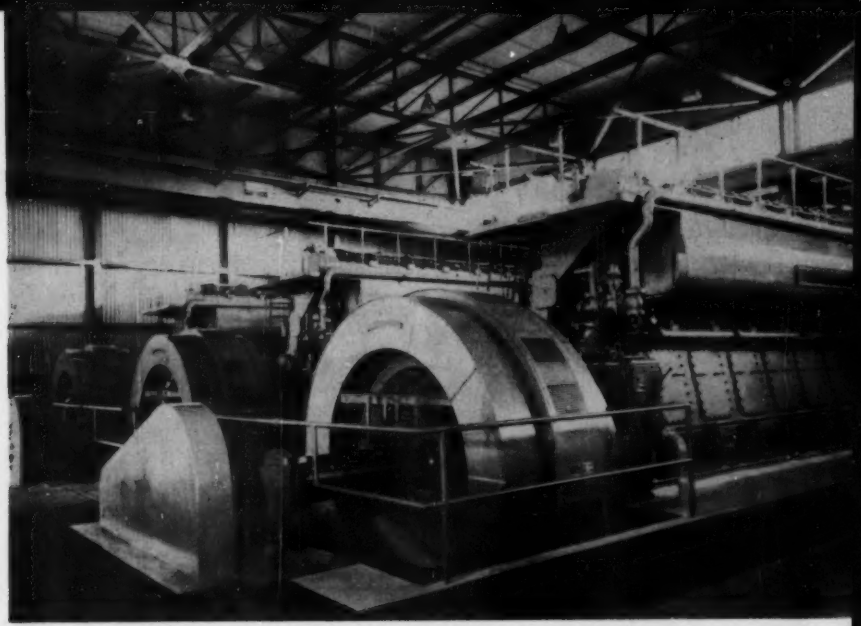
The effect of the new engines was swiftly apparent in improved power-generating efficiency and economy. The first full year that the new plant carried the entire electric load showed that the three units ran a total of 16,280 hours and produced 19,522,000 kwhrs. Total gas consumption was 213,134,000 cubic feet, an average of 10.917 cubic feet per kwhr, and pilot oil consumption was 136,134 gallons, an average of .0069 per kwhr. This compares with an average of 12.06 cubic feet of gas and .0268 gallons of pilot oil per kwhr for the old plant during 1956, when only 10,330,200 kwhrs were generated. This sharp improvement in fuel consumption was achieved although the engines were operating at an average load factor of only 60.03%.

Figuring the fuel costs of both the old and the new plant on the basis of present prices of 22 cents per thousand cubic feet of gas and 11.5 cents per gallon for pilot oil, this improved efficiency is saving Thibodaux 43% on fuel costs.

Increased economy and increased

* Mr. Toups is the Mayor of the City of Thibodaux, La.

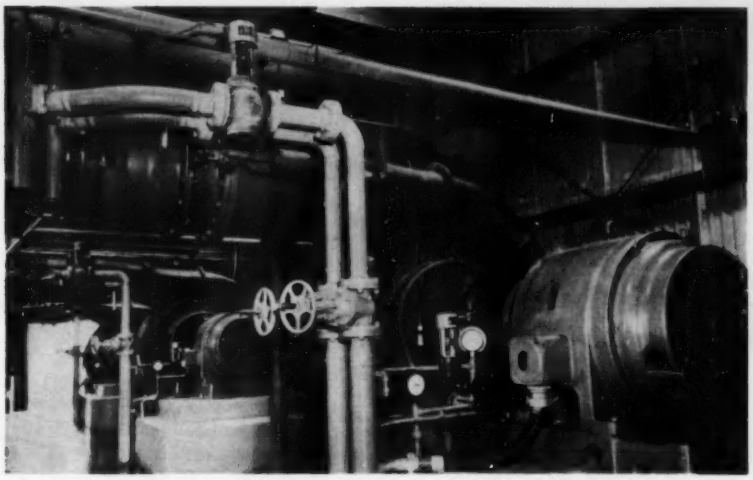




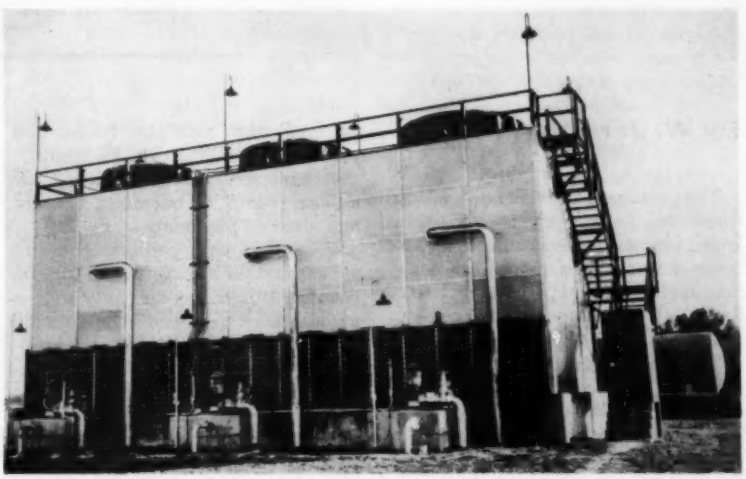
The big engines have saved the city 43% in fuel costs during the first year.

capacity, backed by the old plant for future peak service, assures the town even greater benefits in years to come. The utility program has always operated as a profitable municipal enterprise (during the past nine years, the Water and Light Department has transferred almost a million dollars to the general fund) and the future holds an even brighter picture. The town enjoys additional "free services" with an estimated yearly value of $27,800. Included are street lighting, light and power for sewage pumping, drainage pumping, the library, the recreation centers and the town swimming pool. Power-plant personnel also maintain these facilities without charge.

Historically, generation of its own power has been a plus factor in Thibodaux. Its power facilities have been built up from the original steam-generating unit to the present 6,000-kw capacity without burden to the taxpayers and without outside aid. During the depression, the plant largely supported the other municipal services and during the past nine years, annual contributions of cash to the General Fund and of services to the town have exceeded $100,000.



Roots-Connersville scavenging air blowers are driven by 250-hp motors.

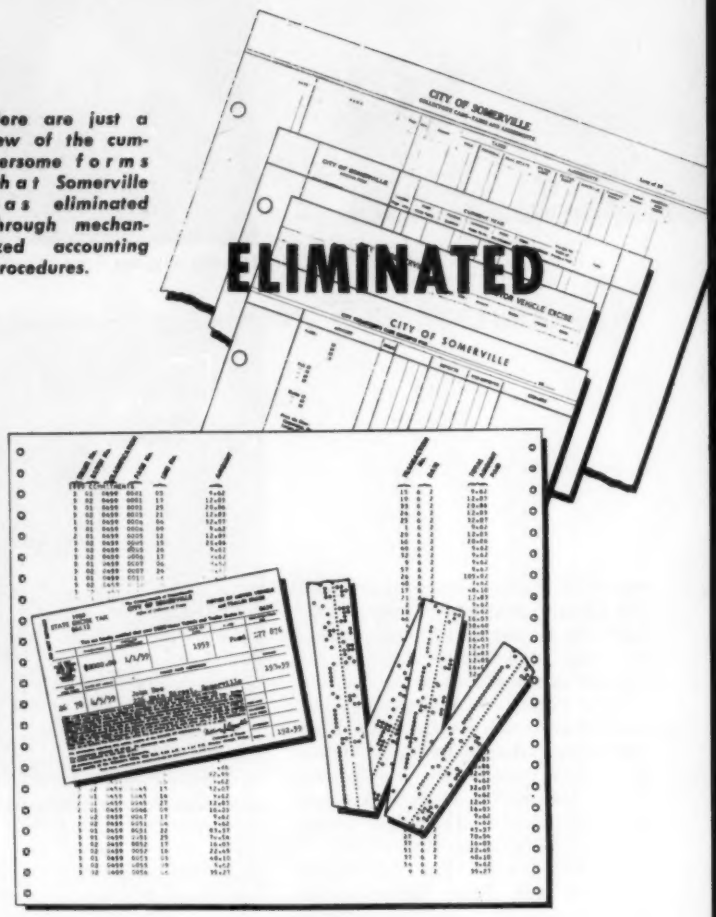


Serving the three dual-fuel engines is this 3-unit Pritchard cooling tower. In the foreground are turbine pumps and motors.

Cash Control Through Mechanized Receipts

Somerville, Mass. business machine system wins 1959 Louisville award

The Burroughs Sensimatic-to-tape unit—key to Somerville's control-conscious cash receipts system (above) and the Receipt-Tape-Tabulation sequence of forms (right).



Here are just a few of the cumbersome forms that Somerville has eliminated through mechanized accounting procedures.

By W. J. REYNOLDS*

The ultimate beneficiary of all municipal improvements is the citizen-taxpayer himself through better services or lower costs. Somerville's taxpayers have benefited in both ways from our mechanized receipts accounting system.

Two Burroughs F 200 Sensimatics with punch-tape units at the cashier's windows eliminated 21 of the 31 steps formerly necessary in an ordinary receipts transaction, saving $3,900 annually. In addition, the taxpayer's receipted bill is now a true record of payment, amount, and time of payment.

Our previous receipts accounting system, while attempting to give us cash control, succeeded only in giving us "cash reported" control. The two-part tax bill (bill and stub) was presented to the cashier for payment. On accepting payment, the cashier validated both parts of the bill with a manually operated perforator which punched the date and the cashier identification number. The stub was then sorted according to type of bill (poll tax, real-estate tax, etc.) and filed in a drawer. At the end of the day, the cashier had to match his cash total with the stub total. Then, the total of each type of bill had to be hand copied into a cash book. In addition, each stub had to be sorted by type to one of 27 major and 120 minor categories and the amount had to be hand entered on printed forms and listed as to page and line number in the cash book.

There were numerous other operations necessary under our old system, in fact a total of 31 of them necessary in the accounting cycle,

* Mr. Reynolds is the Treasurer and Collector of Taxes of Somerville, Mass.

The author, William J. Reynolds (r), Treasurer and Collector of Taxes for Somerville, Mass., accepts the Louisville Award from John W. Agnew, Vice-President of the First National Bank of Boston at the Municipal Finance Officers Association's Conference in Montreal in June 1959.

but there is no need to list them here. Sufficient to say, it was a long, complicated process involving a great deal of hand work and offering many opportunities for clerical error. Even if the cycle was completed successfully, the end result was unsatisfactory. The data obtained, as I mentioned before, gave us a "cash reported" figure but inadequate *real* cash control.

New System Too Simple?

Probably the most difficult phase in developing our mechanized receipts control system was the systematic classification and codification of each type of receipt. With over 260 possible sources of receipts, this was quite a chore. The receipts classification code however, has proved so efficient that it may soon be applied to all municipal offices.

Page line and numbers are assigned by the issuing office and printed on each bill before it is sent to the taxpayer. When he brings his bill in for payment, the cashier merely indexes the classification code number, the page, line number and the amount into the Burroughs machine. Then, as the cashier depresses a motor bar once for each of the two sections of the bill, the machine prints the date, amount of payment, paid symbol (PD), and an automatic consecutive number on both parts of the bill and on a journal sheet. The machine carries locked, accumulative totals to the end of the day.

As the cashier validates each item during the course of a day, the wiring of the Sensimatic to the Burroughs punch-tape recorder creates an entry of items to the tape. The tape is mailed daily to a service bureau where it is converted to punched cards, the cards are mechanically sorted, and a cash book is created by the tabulating equipment of the service bureau. No record of the Treasury Department leaves the department. Only the perforated tape is sent to the outside service bureau and, in case of loss, this can be recreated from the journal entries of the cashier's validating machine.

At the end of the day, the cashier proves his total of cash and checks to the automatically accumulated machine total. This machine total also gives another check against which the Treasurer-Collector may prove his bank deposit total.

Mailed-in payments are receipted by the cashier just as in the case of the cash payments which are made in person.

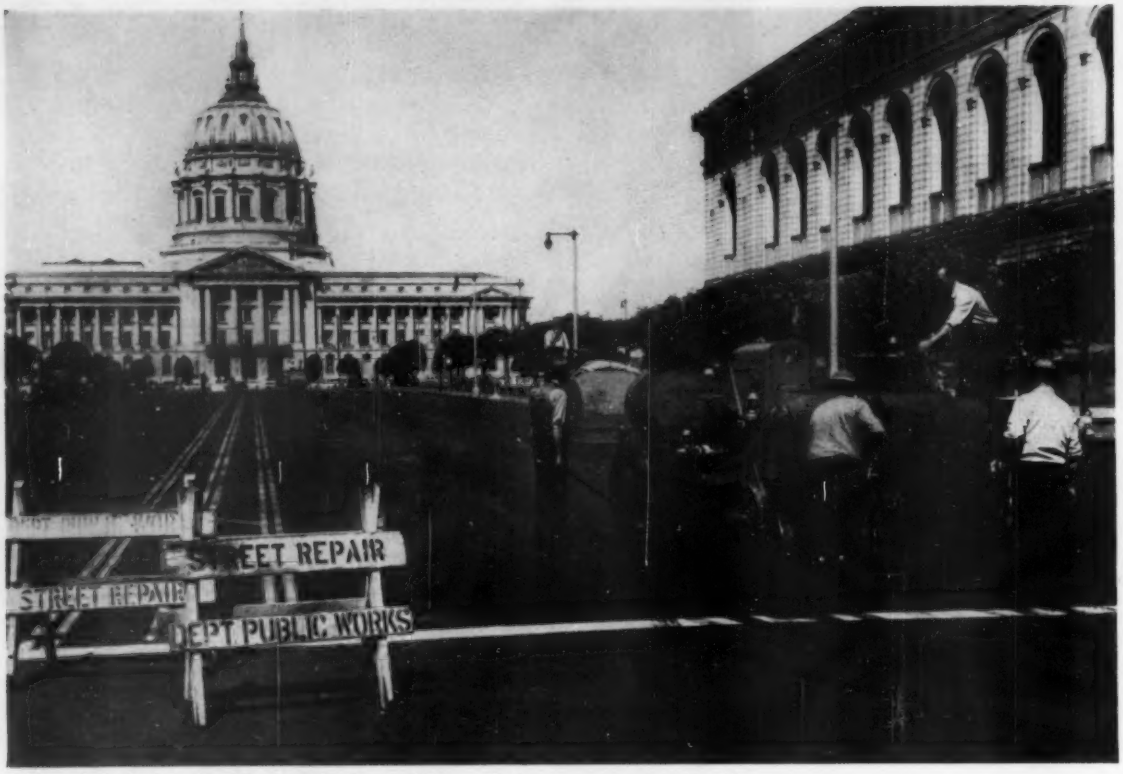
With all expenses being taken into consideration, both in the old system and the new, and considering replacement costs of our new machines and our old billing machines, labor costs, forms, etc., we find that our total cost per annum under our old procedure was $17,800 contrasted against $13,900 for our new mechanized system. Thus, we have increased efficiency many times over and we have accomplished this at an annual savings of $3,900.

The benefits of mechanized accounting in a specific application have been obtained for Somerville and a way to adapt the many advantages of tabulating equipment has now been made clear.

Looking Forward

It has been demonstrated that, through the judicious use of punch tape equipment by a community, an original accounting operation may be able to produce many and varied results.

In this particular system, the few entries of the cashier in validating a receipt have, through punched tape, provided the municipal finance officers with an accurate and complete analysis of receipts by day, week, month or year and any combination thereof by time or type as desired.



Although limited to $2,000 per job, the machine surfacing crew, equipped with a Barber-Greene paver, handles about one-half of the city's resurfacing program. The balance is let out to private contractors.

A smooth working organization tailored to year-round operations and semi-specialized crews expedite . . .

Street Maintenance in San Francisco

By **FRED D. BROWN***

San Francisco's climate permits the performance of street repair activities during all seasons of the year. Consequently, we do all work except asphalt resurfacing on a 12-months' basis. Budgetary restrictions on asphalt resurfacing allow for enough work normally handled in about 120 working days and therefore this work is done during our best weather.

Inasmuch as San Francisco is a combined city and county, its city street and county road systems are one and the same. The amount of maintenance street mileage is as follows:

Major streets	**185 miles**
Secondary streets	**618 "**
State highways	**14 "**
Total	**817 miles**

Provisions of the city's charter impose the following limitations on the Bureau's expenditures:

1. ***Routine maintenance and operation—as provided in annual budget.***
2. ***Routine repair—as provided in annual budget, but limited to jobs estimated to cost less than $2,000.***
3. ***New construction—same limitations as routine repair plus approval by city's Chief Administrative officer.***

The charter also prohibits work on unaccepted streets, except in emergency, and on sidewalks in front of private property.

For the past several years the Department of Public Works has limited its program to the production and use of 50,000 tons of asphaltic mixtures per fiscal year.

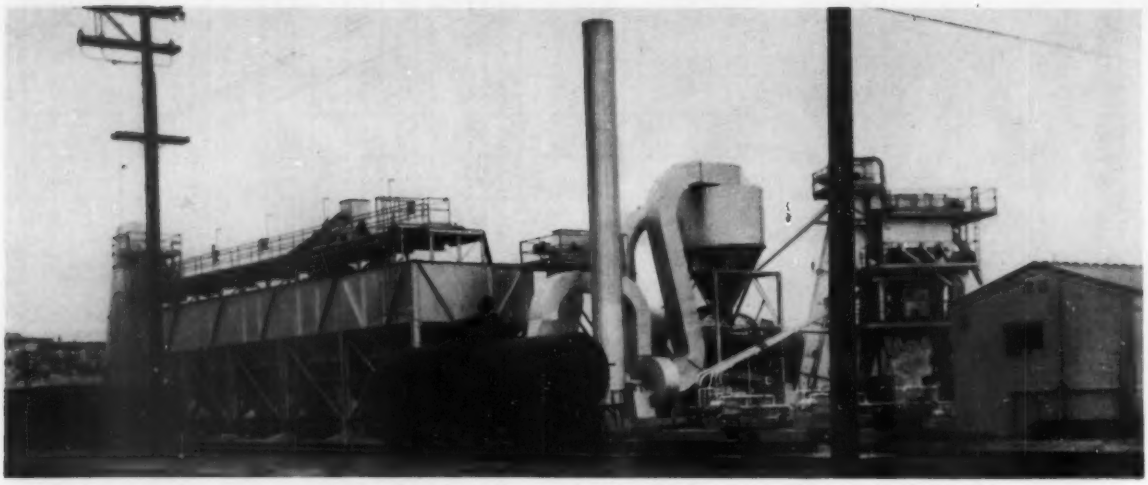
The accompanying chart shows the general organization of the bureau and the basic composition of crews. All employments are subject to civil service provisions and are as provided by salary and appropriation ordinances adopted by the city's Board of Supervisors. We can employ additional personnel on a temporary basis but only when a surplus exists in the wages account. There is no provision for

* Mr. Brown is Superintendent, Bureau of Street Repair, Department of Public Works, San Francisco, California.

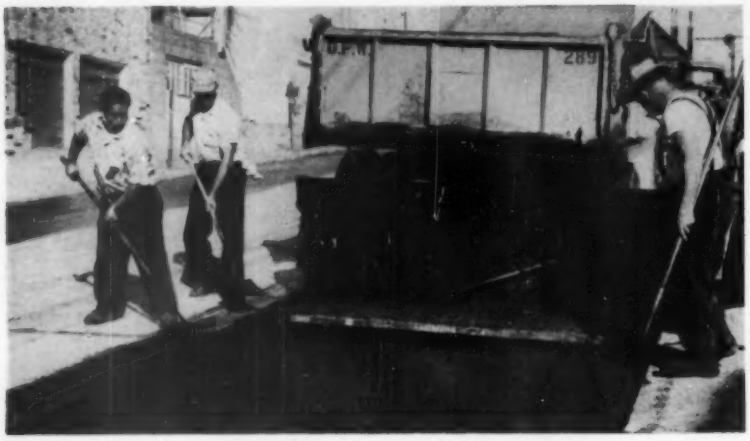
CITY & COUNTY OF SAN FRANCISCO — DEPARTMENT OF PUBLIC WORKS

BUREAU OF STREET REPAIR — BASIC CREWS AS OF JUNE 1959

PERSONNEL	RATE	ASPHALT: MACHINE RESURFACING	ASPHALT: HAND RESURFACING	ASPHALT: GENERAL REPAIR	ASPHALT: GENERAL REPAIR	ASPHALT: GENERAL REPAIR	ASPHALT: COMPRESSOR	COMPRESSOR	UTILITY	CLEANUP HAND LOADED	CLEANUP POWER LOADED	TRACTOR	UTILITY	CONCRETE REPAIR	CONCRETE REPAIR	CONCRETE REPAIR	CURBSETTING	COMPRESSOR	CLEANUP HAND LOADED	CLEANUP HAND LOADED	MATERIALS DELIVERY	LIGHTS AND BARRICADES	CURB YARD	YARDS	SEALING	SEALING	SEALING	ASPHALT PLANT	MISCELLANEOUS ASSIGNMENTS	PART TIME	STANDBY	TOTALS
CEMENT FINISHERS HELPER	$26.12												1																			1
CEMENT FINISHER	26.96											1	2	3	2																	8
LABORER	22.92							4	4	1		1						4	4				2	2	2	2	1					27
"	23.72																							1	1	1						3
"	24.92						2	2				1					2	2						1	1	1						12
LABOR SUB-FOREMAN	28.32								1										1													2
LABOR FOREMAN	28.32																	1														1
CHAUFFEUR - PICKUP	22.00																				1											1
" CREW & TOOL	22.48		1	1	1	1																										4
" 6 C.Y. DUMP	23.12		2	1	1	1			1	1	1							1	1	1												11
" 8 C.Y. DUMP	24.80	5																														5
" LOW-BED & TRAILER	25.00	1																										1				2
" SPECIAL EQPT.	26.80	1					1	1									1							1	1	1						7
" TRACTOR	28.40										1																					1
" TRACTOR-LOADER	29.60									1																						1
ENGINEER, H & P ENGINES	28.00	3	1																													4
"	30.00							1																								1
DRYER - MIXERMAN	25.60																									3						3
FOREMAN, ASPHALT PLANT	29.44																									1						1
GRANITE CUTTER	23.50																					2										2
CURBSETTER	31.00																1															1
ASPHALT WORKER	23.72	4	3	3	3	3																										16
POTMAN	24.92	1	1	1	1	1																								1		6
ASPHALT FINISHER	24.92	4	3	2	2	2																				1				1		15
SUB-FOREMAN ASPHALT FINISHER	28.32	1	1	1	1	1			1															1	1	1						9
FOREMAN ASPHALT FINISHER	28.32																												1			1
TOTALS		20	12	9	9	9	3	3	7	6	3	1	3	3	3	2	3	3	6	6	1	1	2	2	6	6	6	6	2	2		145
EQUIPMENT																																
HIRED TRUCK																					1											1
LIGHT TRUCKS												1	1	1	1	1						1					1	1			8
MEDIUM TRUCKS - CREW & TOOL		1	1	1	1	1																								1	1	6
MEDIUM TRUCKS - COMPRESSOR							1	1										1												1		4
DUMP TRUCKS		6	2	1	1	1			1	1	2								1	1	1					1				3		22
DUMP TRUCKS W. COMPRESSOR																								1	1	1				1		4
LOW-BED TRUCK																												1				1
PAVING MACHINE		1																														1
POWER ROLLERS		2	1																											1	1	5
TRACTOR-LOADER										1																					1	2
TRACTOR & BULLDOZER											1																					1
EMULSION DISTRIBUTORS		1																						1	1	1				2		6
CONCRETE SAW												1																		1		2
MUD JACK												1																				1
HEATER-PLANER								1																								1
ASPHALT MIXTURE HEATER					½																			½								1
PORTABLE TOOL HEATER		1																														1
COMPRESSOR, TRAILER MOUNTED																															1	1
COMPRESSOR, SKID MOUNTED																															1	1
POWER GRADER																														1		1
TRACTOR CRANE																														1		1
TIP TRAILER																													1			1
ASPHALT SPREADER BOX			1																													1



San Francisco operates its own asphalt plant. The capacity is 90 tons per hour, with all conveyors and elevators rated at 150 tons per hour.



The hand resurfacing crew utilizes this spreader-box paver to cover areas too large for handwork but too small for economical machine operation.

Heater-planer work precedes resurfacing wherever gutters are shallow and surfacing is to extend to the curb.

seasonal employment and temporary vacancies of short duration are seldom filled.

Since variations occur within certain functions and since all functions are not performed continuously throughout the year, the composition of some crews does change. For example, work requiring the services of an operating engineer that is to be performed by a crew not normally employing one, is usually scheduled to be done while the machine surfacing crew is assigned to general repair, at which time the latter crew employs one rather than three operating engineers. Other changes will be mentioned in the description of some of the crews and the work performed.

Routine work includes the maintenance and repair of improved streets, gutters, curbs, retaining walls, stairways, pedestrian underpasses, guard rails and fences, elimination of hazards in unimproved streets and the maintenance of city dumps. Also included is the maintenance and operation of three lift bridges and one vehicular tunnel.

Work ordered by the Director of Public Works includes traffic channelization, the construction of minor structures appurtenant to streets and emergency work done for the protection of the city and/or the public.

We also perform work for other departments or bureaus and this includes the repair of pavement in the municipal railway track areas, the repaving of trenches opened for installation or repair of sewers, the repair of state highways within the city, the repair of pavements in

The compressor crew is supplied with equipment that is appropriate to its purposes.

In the same way equipment used by the crack sealing crew is adapted to its own particular needs.

the yards of city institutions and other minor services.

Funds are budgeted prior to the start of the fiscal year and appropriated from a Special Road Improvement Fund. This fund is composed of monies derived from motor fuel taxes, certain motor vehicle fees and certain fines and forfeitures resulting from vehicle code violations. It is established pursuant to state law and can be used only for roads and appurtenant structures.

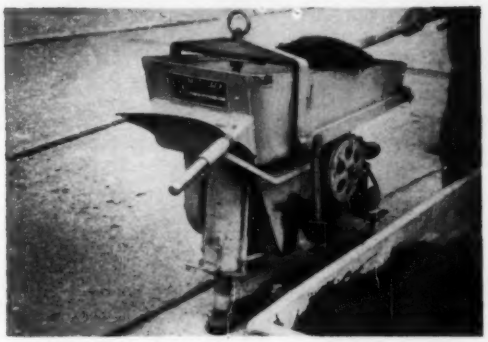
Off-street work done for other agencies is reimbursed by the agency served.

The bureau's gross budget for the fiscal year July 1, 1958 to June 30, 1959 amounted to approximately $1,646,000 for street repair and $174,000 for bridges and tunnel.

Much of our street-repair work consists of bituminous resurfacing, and for this work we have a 16- to 20-man machine - resurfacing crew and a 12-man hand resurfacing crew. About one-half of the city's street-resurfacing work is done by contract under the Bureau of Engineering and one-half by city forces under the Bureau of Street Repairs. A joint program is prepared annually and the small scattered jobs "allotted" to the Bureau of Street Repairs. During the fiscal year ended June 30, 1958, city forces resurfaced approximately 27 miles of streets covering 294 locations. We used 32,000 tons of asphaltic mixture to cover an area of 5,309,000 sq. ft.; or 165.9 sq. ft. per ton.

In determining whether a street is to be resurfaced, we consider

(Continued on page 144)



One compressor crew spends about ten per cent of its time on mudjacking operations.

Table I

Mix Designation	*Composition—Percentage*				
	Asphalt	*No. 6*	*5/16"*	*⅝"*	*1¼"*
Surface	8½	91½			
School	7	60	33		
Topeka	6	45	25	24	
Spreader	5½	40	25	17½	12
Binder	3½	21	28	22½	25
Cold*	½	35½	27½	30½	

* 6% fuel oil, Pacific Specification 300 added.

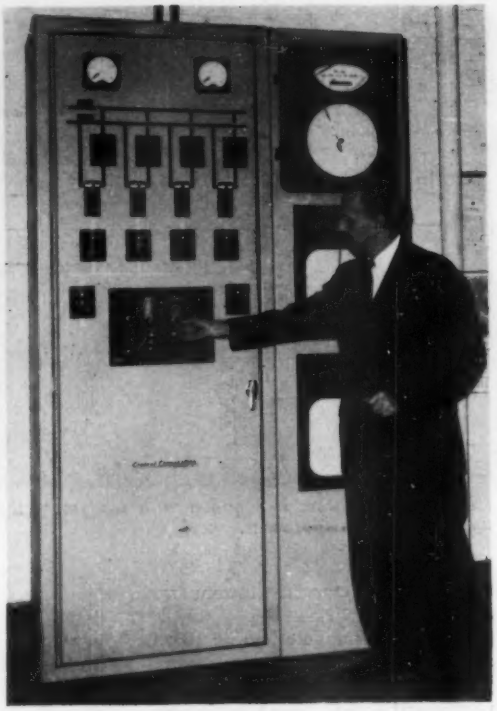
Table II

PRICES OF MATERIALS USED

Liquid Asphalt, car lots at city's plant	$28.828 per ton
Gravel " "	2.358 per ton
Coarse Sand " "	2.566 per ton
Fine Sand " "	2.08 per ton
Emulsified Asphalt, at Vendor's Plant	.125 per gal.
Concrete Mix "	3.441 per ton
Coarse Sand "	3.515 per ton
Premix Concrete, delivered	$14.73 to 16.66 per cu. yd.
Stove Oil, delivered	.129 per gal.

Remote Control Keys Water Improvement

Town officials of Montclair, N. J., faced with complex problems of topography, high costs and area configuration, have beaten them all—now the plant is ready for full remote control operation



At the master panel in Watchung Pumping Station the author adjusts a unit more than two miles away.

By **A. S. GIANNETTI***

Officials of Montclair, N. J. are enthusiastically touting the new Remote Control Supervisory System for one-station operation of their water distribution network—and well they might. They have been struggling with tricky, terrain-imposed problems for 35 years, ever since the system was purchased from the privately owned and operated Montclair Water Company, which had furnished water to the community since 1887.

The town has an area of 6.16 square miles, laid out on a fairly narrow 1½-mile band that is 4 miles long. Its long dimension sprawls along a hillside that rises from 220 feet in elevation to 650 feet across its mile and one-half width. Its main intake and intake pumping station (Grove Street Station) are located at the extreme northeast corner of the town, the main distribution pumping station (Watchung) is centrally located, a high-service storage standpipe is located on the western boundary and low-service storage is provided by a reinforced concrete, underground reservoir at the southern extremity of the system. With segments of the system so widely separated, maintenance personnel are confronted with serious problems in taking care of individual components.

* Mr. Giannetti is the Superintendent of Operations, Montclair Water Bureau, Montclair, N. J.

The System

Because of the wide differences in elevation, the water system is laid out in three narrow service zones lying one above the other and extending the length of the town. The system contains 127 miles of mains, 1,017 hydrants, 10,320 meters and 10,600 service connections. Normal system pressures range from 50 to 140 psi, maintained by the storage reservoirs that float on two of the three service zones and by pumps to the middle area zone. The 2,500,000-gallon standpipe stands in the highest point in the combined system, serving the high-service zone. This standpipe was erected in 1929. It is of steel construction with an open top. The underground reservoir adds its 1,500,000 gallons of storage to the available supply, floating on the low-service zone. The middle service zone, the largest of the three zones, is supplied directly by pumps except from midnight to five in the morning, when water is supplied through pressure-reducing valves.

Montclair sells water to several adjacent communities and delivers to the Borough of Glen Ridge its allotment of water from its main source, the Wanaque Reservoir, located some 14 miles from Montclair and rated at a safe yield of 110 mgd. Domestic and out-of-town customers number over 65,000 and use about 5 mgd on an average day, with daily peaks of 200% and hourly peaks of 300% during periods of maximum usage.

The great bulk of use is residential—Montclair and Glen Ridge are both more than 99% residential communities. The largest outside user, the Township of Cedar Grove, has some industry.

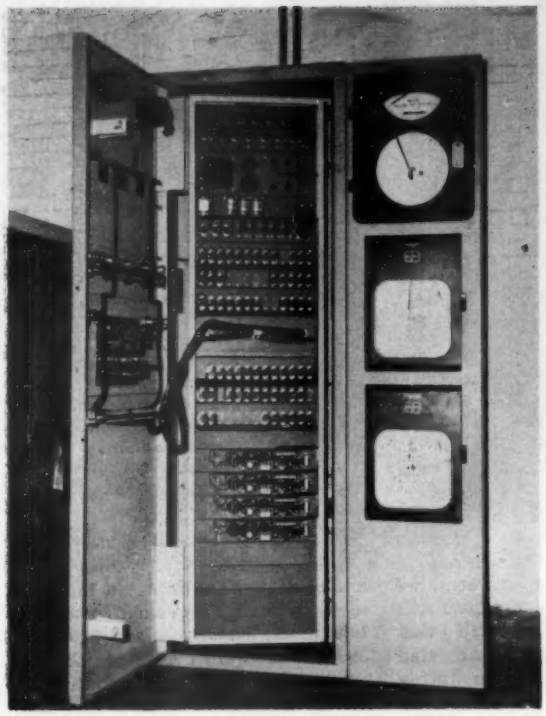
Pumping Stations

The Grove Street Pumping Station, the main intake station is equipped with five dumping units. Among them are:

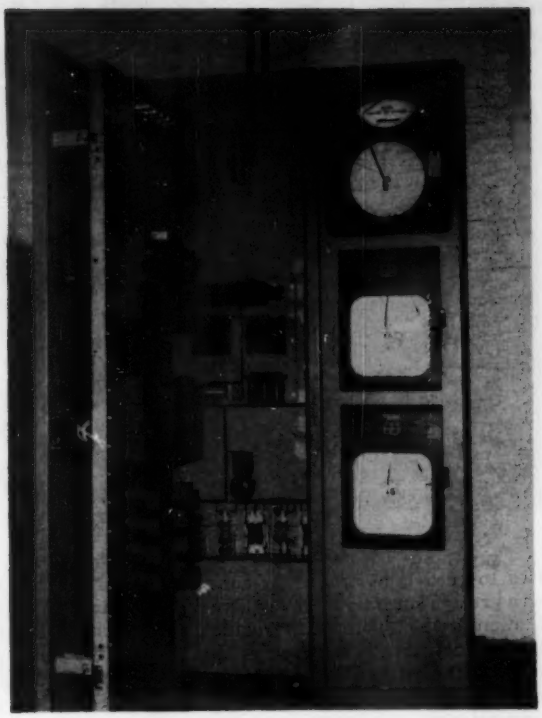
A 100-hp Fairbanks-Morse induction motor driving a 1½-mgd horizontal centrifugal pump.

A 125-hp Westinghouse induction motor driving a 2½-mgd Fairbanks-Morse centrifugal pump.

A 200-hp General Electric induction



A swing of the front panel bares the faces of the plugs in the relay units of the remote control equipment . . .



. . . and a swing of the secondary panel reveals the bank relay boxes from the rear.

motor driving a 4½-mgd Worthington centrifugal pump.

A 300-hp General Electric induction motor driving a 7-mgd De Laval centrifugal pump.

Standby service is provided by a 10-mgd De Laval centrifugal pump which is driven by a 560-hp, 16-cylinder Buffalo gasoline engine.

The Watchung Station receives its water from the Grove Street Station and has five pumping units also. Its four electrically-driven units are:

A 1½-mgd De Laval centrifugal pump driven by a 40-hp General Electric induction motor

A 2½-mgd De Laval centrifugal pump driven by a 75-hp General Electric induction motor.

A 3-mgd De Laval centrifugal pump driven by a 150-hp General Electric synchronous motor.

A 4-mgd Morris pump driven by a 300-hp General Electric motor.

Stand-by service is provided by a 4-mgd De Laval pump driven by an 8-cylinder, 260-hp Buffalo gasoline engine.

Because of its central location, Watchung was chosen as the dispatch or central control station. From this point, the Grove Street Station is monitored and controlled and telemetering units provide continuous supervisory and performance records.

The physical control equipment at each pumping station is housed in a cabinet 90 inches high, 32 inches wide and 20 inches deep. Designed and manufactured by Control Corporation, Minneapolis, Minn., control units feature a swinging-panel arrangement of plug-in-type relays, equipped with dust-tight covers, planned to provide easy inspection and maintenance. Only the interposing relays are stationary—enclosed industrial type—rated at 10 amperes at 125 volts (direct current).

The Watchung (dispatch) Station also has an auxiliary panel that houses three telemetering recorders of flow, suction and discharge pressures at the Grove Street Station. All telemetering (transmitting) at both stations is handled with 120-volt, 60-cycle alternating-current supply.

The supervisory control equipment performs the following functions:

1) indicates position of two incoming electric-supply circuit breakers, with provision for alarm on change of position of either,

2) starts and stops pumping units with indication of whether they are stopped or running,

3) indicates whether cone valves are open, closed or in an intermediate position,

4) provides selective indication of voltage and amperes at pump-motor terminals,

5) supervises remote control channel in use with a visual and audible alarm when it fails,

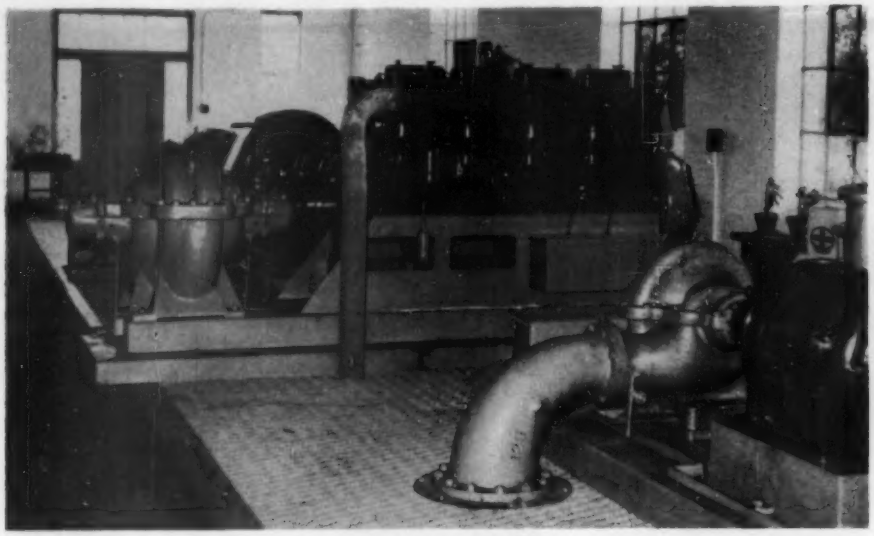
6) transfers automatically to reserve control channel in case of failure in main channel,

7) permits manual transfer to reserve channel and from reserve to main channel,

8) records, indicates and integrates continuously the total flow of water and

9) records continuously the pressures on suction and discharge headers of each pumping unit.

The system uses a coded sequence of four audio-frequency tones—the particular operation selected determines the frequency sequence. This information is sent by means of a motor-operated cam-switch to a multi-channel signal generator, which transmits the coded frequen-



Watchung, the central pumping station, contains four electrically driven pumping units and an 8-cylinder, 260-hp oldster that looks like a young'un. A stand-by, it will pump 4-mgd volume when needed.

cies to reed-type, frequency-sensitive relays at the Grove Street Station, which in turn actuate heavy-duty interposing relays that operate the pumps desired. When electrical contacts close to start a particular pump motor, a polarized d-c signal is transmitted back to the Watchung Station to indicate that the desired pumping units are in operation. Operation of the equipment depends solely upon the sequence of audio-tones, not upon their intensity or timing.

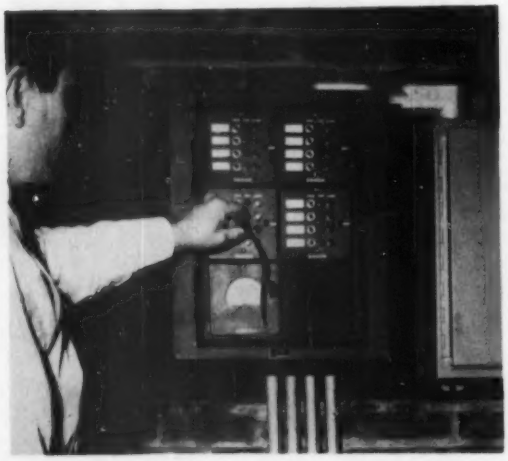
Continuous flow and pressure telemetering is done by audio-frequency signals, while supervision of incoming power-line circuit breakers, cone-valve positions and selective recording of bus voltage and incoming-line amperes is transmitted by polarized d-c signals.

Continuous monitoring of the control channel in use between stations is provided. Also added was a "remote-local" keyswitch that overrides any operation actuated from the Watchung Station during "down-periods" at Grove Street. This precaution allows safe maintenance or repair of equipment at the Grove Street Station. A visual and audible alarm system for any operation of the Grove Street Station equipment not initiated by the operator at Watchung is provided.

Functions are normally transmitted over a leased telephone wire pair but a town-owned line runs underground along a 20-inch connecting main between stations. Audio-frequency tones are maintained in other than 60 cycles per second (normal frequency of a-c lines in the area), and the sum or the difference between any two audio frequencies is not a multiple of 60 cycles. Frequencies used for equipment operation are 310, 350, 390, 430 and 470 cycles per second, while those used for continuous telemetering are 935, 1105 and 1275 cycles. One frequency of 1445 cycles per second is reserved for line monitoring.

The power supply for switchgear operation at the Grove Street Station is a 125-volt (nominal) d-c battery, which operates relays there. Telemetering transmitters at both stations operate from a 120-volt, 60-cycle a-c supply, with an inverter installed at the Grove Street Station for telemetering operation in the rare cases of an a-c power failure. At Grove Street Station, Lightning Service batteries manufactured by Gulton Industries, Inc., Hasbrouck Heights, N. J., have 96 hermetically sealed, nickel-cadmium battery cells, with a nominal capacity of 9 ampere-hours at one-hour and eight-hour discharge rates. An automatic charger that is self-regulating from 100 milliamperes to 10 amperes of charging current is provided. It is used to operate new, electrically operated switchgear, as well as the remote supervisory equipment.

Temperature detectors are installed in the housing of each bearing of every pumping unit at the Grove Street Station. Manufactured by Thomas A. Edison Industries, they are known as the Omniguard Indicating and Alarm System. A sensitive element in the tip of a flexible tube is held against the bearing surface by a spring-loaded holder assembly. An increase in



Bearing temperature detector panel, the Edison Omniguard Indication and Alarm Unit, indicates overheated bearings, pinpoints the trouble and, with a plug-in, will even tell you how hot the troublesome bearing is.

the temperature of the bearing metal increases the resistance in the detector and, since the detector is one leg of a wheatstone bridge circuit, response to heating is triggered within five seconds. Voltage variations do not affect its operation.

The overheating of any bearing of a pumping unit operating beyond its pre-set limits actuates an electrical contact, tripping the pump-motor circuit breaker and stopping the pump. This information is automatically transmitted to the Watchung Station, allowing immediate dispatching of a trouble shooter. A monitoring system, also at Grove, provides circuits for each pumping unit, responds to the temperature variation at every bearing and lights an individual trouble lamp when any one bearing is overheated. No time is spent by the trouble shooter trying to locate the danger spot.

All pumping units are equipped with cone valves on the discharge side of each unit. Proper adjustment (by pitometer control) of opening and closing speeds in each valve successfully starts, stops, and changes over designated pumps. The two larger pump motors at the Grove Street Station are equipped with drum control switches with reversible motors. Adjustment of the rate of drum control speed and cone-valve opening and closing, has all but eliminated "bumps" in the system.

Training

There is only one job left to do at Montclair—complete the training of the full-time Water Department crew. Operators, trained and assigned to other jobs, will be instructed in operations of one-station control of the Montclair system in the event of sickness, vacations and retirement of regular personnel. Preparation of men for maintenance and repair of this equipment and of equipment in the unattended station must be made. One of the most difficult problems confronting the town in this respect is not a physical one, nor even an academic one. It is the job of convincing the man on duty at the Watchung Station that he can actually see what he reads in the meters and indicating lights and can push the buttons that control a station more than two miles away.

To aid these operators in accepting this set of operational concepts, the town has installed an intercommunication system between the two stations so that operators at the transmitting station can hear the various operations at Grove Street when motors cut in and out, thus lending a feeling of security to the remote operation.

To date, new techniques indicate that ultimately, remote control of the major portion of Montclair's system will result in more efficient, more beneficial and less expensive control of the city's water supply and distribution. Switchboard equipment was manufactured by Westinghouse Electric Corporation and battery changer units were furnished by Associated Lighting Service, Inc., Hackensack, N. J.

No Taxes Needed

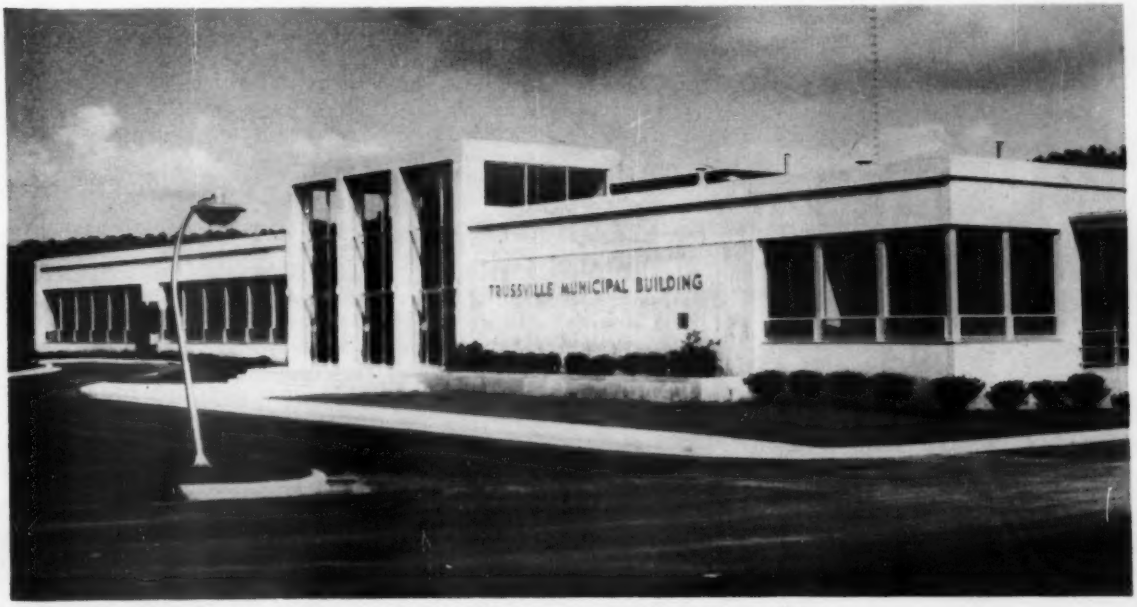
Trussville, Ala., a city which has no taxes, recently built and occupied a new $200,000 city hall. It was paid for entirely from revenues of the water and gas utilities owned by the city.

Trussville, 15 miles from Birmingham, was incorporated in 1947, has grown rapidly and now has a population of about 2,500 and 12 municipal employes.

The new municipal building has a drive-in window for persons paying gas, water and sewer service bills, and a paved parking area for 100 cars.

The building houses all departments of the city and has an auditorium and a jail; the jail has six cells, four for men and two for women.

The city had been renting space until the commodious new municipal building was erected. Horace Norrell is mayor and Lee M. Hill is in charge of operations including the gas and water utilities.



The new Trussville, Ala. city hall was paid for by the city-owned water and gas utilities.

Items in Palo Alto's Renewal

By LEON K. RIMOV*

The character of Palo Alto's planned commercial area is shown in this sketch.

Palo Alto, California—a city long famous for Stanford University and its research activities—has adopted a program to redevelop and rebuild a commercial and residential area of seventy-six acres without the use of state or federal assistance. Merchants and property owners, and city officials in Palo Alto believe greater opportunities and satisfaction are possible by cleaning up one's own physical disorder with local energies, ideas, and financial resources.

California Avenue, a major shopping center in Palo Alto, is presently in the process of an economic and physical rebirth. This area is an older part of the city and was formerly known as the Town of Mayfield. Later it became known as South Palo Alto, and in the 1920's was annexed to what is now the City of Palo Alto.

The unique aspect of the development program in the California Avenue area is that this is basically an urban renewal project by private enterprise and will not require the use of federal subsidy or supervision. As is the case with most urban renewal programs, an economic crisis had to exist before collective action could be obtained. Many buildings along California Avenue had remained vacant for months—several for more than two years. Retail activity was not what it should have been. Parking was inadequate. The main avenue of business was badly congested by intermixed pedestrian and vehicular travel. The avenue was unattractive. New buildings were built next to worn-out structures. The marquee on one shop blanketed out the marquee on another. The need for united action was clearly recognized by practically every merchant and property-owner on the Avenue.

What has been accomplished in twelve months is a challenge for other cities, private investors and developers. Some of the objectives have been realized. Others will require one or two more years before any results can be seen. The entire program is gauged to a process of economic and social evolution rather than revolution. It is believed a period of five to eight years will be required for full implementation of the plan.

Accomplishments

A number of things have been accomplished during the last twelve months. For instance:

1. Under the leadership of a local realtor, a working non-profit organization spearheads the planning effort and financing of buildings for lease or sale. This non-profit organization was the beach-head on which the merchants, property-owners, industrial and professional firms launched this urban renewal program.

2. New stores, large and small, are now in a position to locate in the retail area and be assured that incongruous retail activities or non-commercial land uses cannot develop adjacent to their place of business.

3. Land is presently being assembled without the use of eminent domain.

4. The county is planning a 2½-million-dollar county office building in the project area.

5. A parking district has been created; a major portion of its bonds have been sold; and actual construction of free parking lots has been under way for more than four months.

6. Not only has the city responded to the need for strong code enforcement; the planning commission and the city council have amended the zoning ordinance to encourage apartments and multi-story office and commercial structures.

7. Major access streets to the retail center are to be widened; small alleys are to be closed; some street utility lines will be rerouted—in short, approximately five acres of land and streets and rights-of-way will be returned to the tax rolls and at the same time the circulation system will be improved.

All this public improvement is to be done without increasing either the tax roll or the city's assessment structure. Palo Alto's city manager has stated, "Although the key to the success of this program is the action which private enterprise will take, the city's contribution is vital."

It should be mentioned that during the last nine years Palo Alto has undertaken many important multi-million-dollar civic projects, yet during this period of tremendous population and physical growth, the city's financial record has been enviable in that the city tax rate has been reduced from $1.30 to 75 cents.

* Mr. Rimov is on the staff of Schmidts, Hardman & Wong, architects and city planners, Berkeley, Calif. This article is taken from "Palo Alto's Urban Renewal Plan" in *Traffic Quarterly*, July 1959, published by the Eno Foundation for Highway Traffic Control, Saugatuck, Conn.

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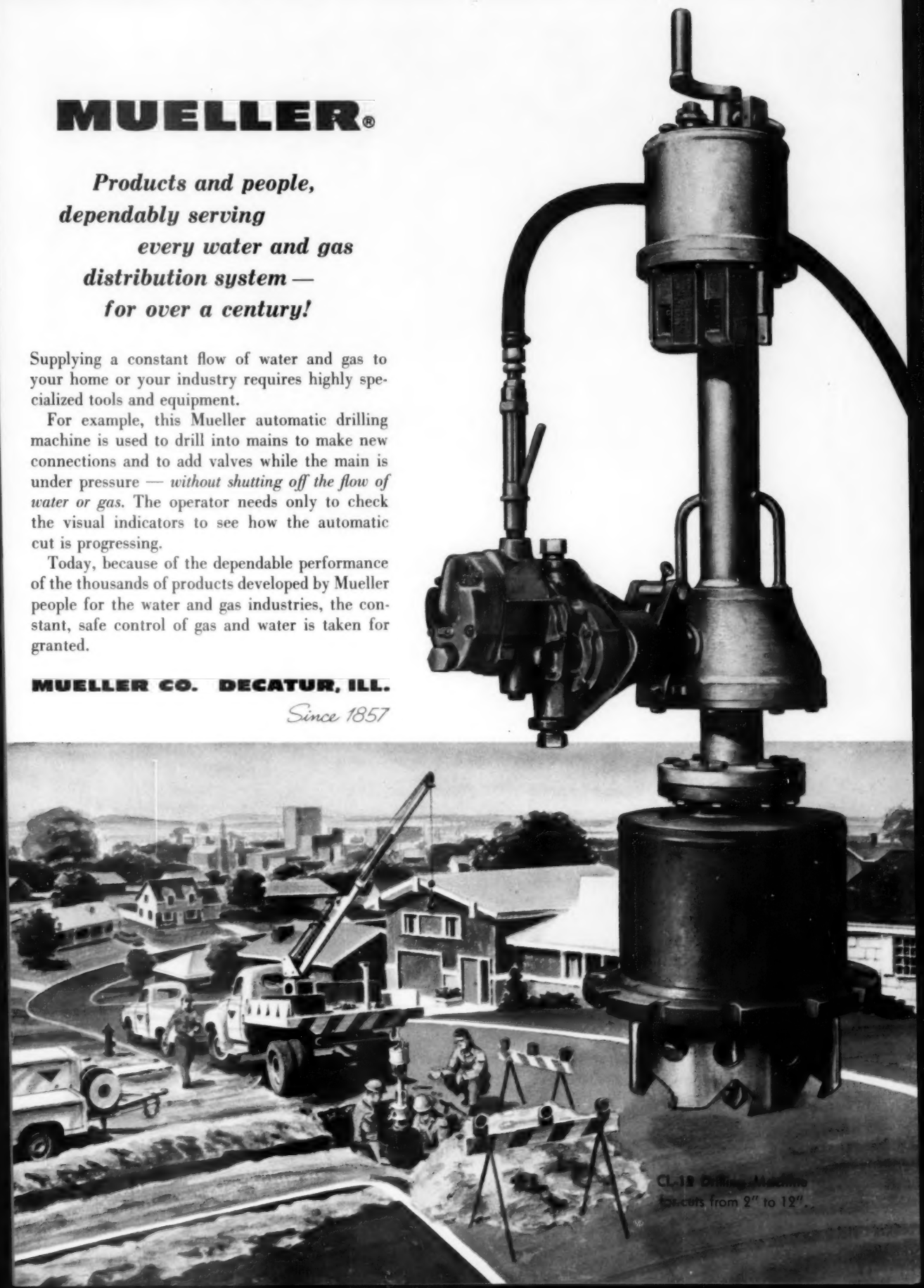


CL-12 Drilling Machine for cuts from 2" to 12".

The new single-pedestal spheroid storage tank leaves no doubt as to your location when you arrive at Kingman, Kan.

Year-Round Water in Kingman, Kan.

Two new soft-water wells, only one mile from an old one, abandoned because of hardness, will supplement spring-water supply in revamped system

By **EARL HANES***

The ½-mgd spring-water supply system that has served Kingman for 52 years has been supplemented and overhauled in recent months. Principal features of the improvement program are two driven wells and an elevated storage tank.

In addition, 22,000 feet of cast-iron pipe have been installed to serve the new wells and water tower and to loop two-thirds of the city with 10-inch mains.

The $180,000 project assures the city's 4,000 residents an adequate supply of soft water on a year-round basis for the first time. Most of their water comes from the springs, which are located three miles west of town. Water flows by gravity to two reservoirs with a combined capacity of 565,000 gallons. The reservoirs are located at the municipal power plant and water is pumped into the distribution system at this point.

New Wells

The new wells, drilled about a mile north of the city center by the Layne-Western Co. of Wichita, Kan., cost the city $5,000. One ½-mgd Layne vertical pump was purchased for $2,500 to serve one of the wells. The pump that serves the other well originally was used to draw water from an old well source about one mile away from the new ones. This source was abandoned because of the water's hardness when the current project was completed. The older Worthington vertical turbine pump is able to deliver 360,000 gallons per day.

The water in the new wells is comparable in quality, taste and odor characteristics and hardness with that of the main spring-water supply.

The new Pittsburgh-Des Moines elevated storage tank, is a 500,000-gallon spheroid-type structure on a single pedestal. The $68,950 purchase price included painting and connections as well as the dismantling of an old 70,000-gallon tower.

A portable 15-kw Oliver generator was purchased as a stand-by unit from Layne-Western. It is capable of operating the largest well during any power emergency.

Kingman now has a firm supply of 1 mgd, with peak capacities of 1½ mgd, to serve the city's water users.

* Mr. Hanes is the Superintendent of Utilities in Kingman, Kan.

Another *FIRST!*
The New *AMERICAN*
ALL BRONZE
FROST BOTTOM METER

- Snaps cleanly at the same breaking pressure as a cast iron bottom.
- Internal Metal Parts — Meter Body — Frost Bottom . . . all made of Bronze. No dissimilar metals exposed to water.
- Complete Frost Protection to all working parts in both water lubricated and oil-enclosed gear train models.

Actual photograph of Bronze Frost Bottom after freezing.

Bottom does not drop out when broken. It is kept from falling by the flange bolt heads.

Now for the first time, a true frost-bottom water meter of all bronze construction. This new AMERICAN Water Meter maintains all of the superior features and dependable qualities of the cast iron bottom type, proven in more than 37 years of service.

Should the meter freeze, the center section breaks out at 500-550 psi, to relieve strain on all internal parts. Type and place of fracture are controlled by design. It breaks by tension, not by shearing of projecting lugs. Bottom casting is machined to establish predetermined breaking pressure that is independent of the tightness of the flange bolts. Thus, every AMERICAN Frost Bottom Meter breaks in the *same* manner, at the *same* pressure, at the *same* place!

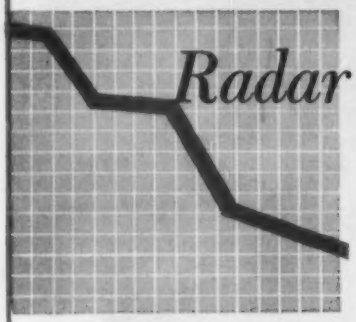
When the frost bottom breaks, all interior parts, including the gears, separate and move with the ice to avoid damage. After a freeze-up, only the bottom has to be replaced — a low cost, easy operation.

If you have meter freezing problems, investigate the new cost-saving ALL-BRONZE, AMERICAN Frost Bottom Meter. Write for literature.

BUFFALO METER COMPANY
INCORPORATED

2902 Main Street
Buffalo, New York

NEWSPAPERS REPORT:



Radar Cuts Highway Death Toll

Results provide the best endorsement of Electro-Matic® Radar Speed Meters. Here's how a few newspapers have reported those results when Speed Meters were used locally:

"Radar Cuts road death toll 25%" — *Long Beach, Calif., Ind. Press Telegram.* "Accidents' injuries reduced 22%" — *Cleveland Press.* "Number of cars exceeding 50 miles an hour reduced 50%" — *N.Y. Journal-American.* "Police and court officials feel that radar is superior to other types of speed enforcement because it virtually eliminates human errors." — *Arcadia, Calif., Tribune & News.* "Reduces local traffic deaths by 28%" — *Pasadena, Calif., Star News.* "Psychological effect like magic" — *Pittsburgh Sun-Telegraph.* "Psychological effect of radar has reduced speeding, and that, in turn, has reduced the death toll" — *Belleville, Ill., Advocate.* "Radar machines cost money. But so do funerals. In the long run radar is cheaper." — *Houston Press.* "Nation's top traffic policeman is radar; use is increasing" — *Greenwood, S.C., Index-Journal.* "Traffic Toll Drop Credited to Radar" — *Buffalo, N.Y., Courier-Express.* "Radar cutting death toll on highways" — *Bridgeport, Conn., Sunday Post.* "Grand Jury urges radar speed control" — *San Jose, Calif., Mercury.* "We've saved 6 lives! Give radar a hand" — *Houston Press.* "Radar credited in accident decrease" — *Lubbock, Texas, Avalanche-Journal.* "Since use of radar highway deaths drop" — *Wichita Falls, Texas, Daily Times.* "Oregon motorists favor the use of radar in speed detection by ratio of three to one" — *Eugene, Oregon, Register Guard.* "Most effective means of stopping slaughter on the highways" — *Atlantic City, N.J., Press.*

To help stop the slaughter on *your* highways, investigate the advantages of Radar — a proved scientific means of speed detection.

Highly versatile, Electro-Matic Speed Meter can be mounted permanently on vehicle, or used as portable equipment.

Radar is most accepted method of conducting speed studies used in determining reasonable speed limits.

Graphic Recorder provides permanent record.

For details, write for Bulletin R-112.

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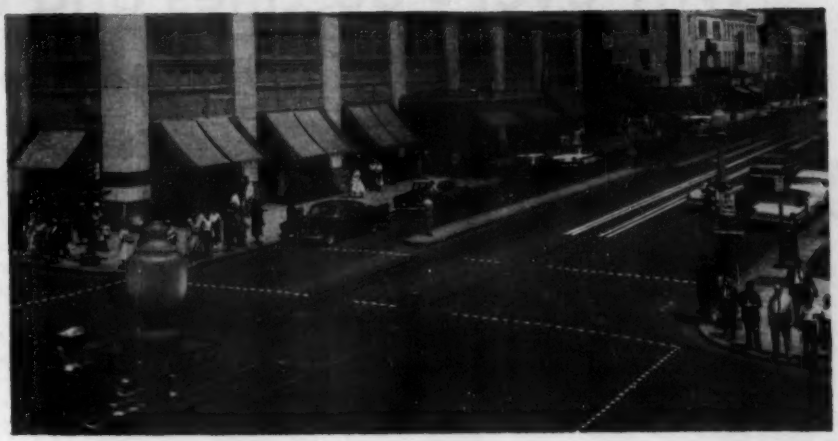
AUTOMATIC SIGNAL DIVISION

EASTERN INDUSTRIES, INC. • REGENT STREET, E. NORWALK, CONNECTICUT



F Street N. W. in downtown Washington—showing plastic markers at crosswalks and painted traffic lines bordering streetcar tracks.

Same Test for Paint and Plastic Markings

By R. G. WESSELLS, Procurement Officer, District of Columbia

In the City of Washington, D. C., our streets are marked with traffic paint and pavement markers to facilitate traffic control. We use both the reflective and non-reflective types of these materials. Where the markings run parallel to traffic we use paint, whereas for those running across the street from curb to curb we have generally used plastic pavement markers, at least in the downtown areas.

We find that in addition to the effect of heavy traffic on the wear of both of these materials, we can expect an even greater wear factor at those points where traffic turns. This is probably a greater problem in the District of Columbia than in other cities because of the innumerable circles and traffic islands, as well as an exceptionally dense traffic situation to be expected in a city with a high transient population plus more than 800,000 residents within the city limits, and an additional population of approximately 1,200,000 in the suburban areas, many of whom work in the District of Columbia.

Best Markings Wanted

Necessarily, with the monumental aspects of our city, the responsibilities to the federal government, and the relationship of the city government to the Congress of the United States which is, in reality, the governing body of the city, plus the other factors we have outlined, it is essential that we have an uninterrupted traffic flow. Unfortunately, there is no method of marking pavements permanently to facilitate the flow of traffic. Therefore, it must be interrupted periodically for this purpose. This becomes a primary consideration in determining the type and quality of pavement marking material to be used. In this case, as in the purchase of every item used in the city government, it is essential that we concern ourselves with providing maximum continuity of service, maximum effectiveness, easy application, shortest "down time" for the street involved, etc., and not just buying the cheapest product. However, being cost-conscious people, we are very much interested in promoting those things which do contribute to the best price. We want to secure maximum competition from responsible business firms and not be at the mercy of a single supplier.

Low Price, High Cost

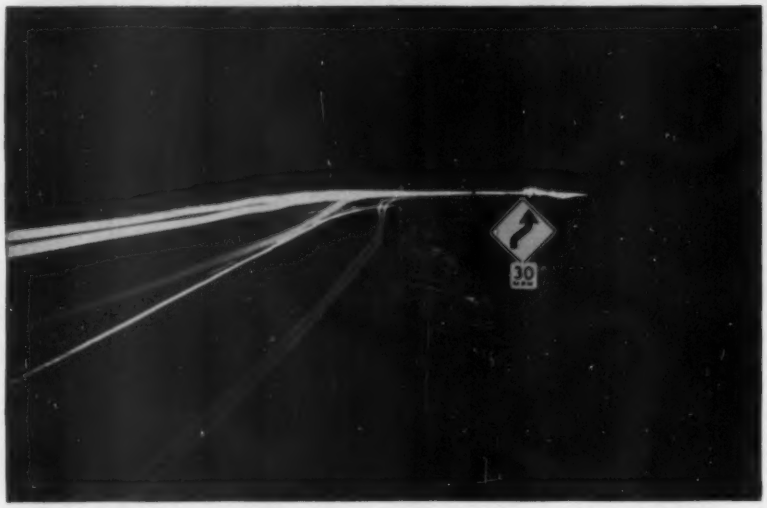
A number of years ago we found ourselves in the position of having had experience with one or two traffic paints which had given good performance and a few regrettable experiences with products which, though slightly lower in price, cost us much more in the long run.

From this experience, we developed specifications which required each bidder to furnish samples of his product with his bid. The sample from each bidder was applied to one of our heaviest traffic areas in the city and, in accordance with our specifications, our traffic engineers analyzed the time it required to apply the marking material, the time required for it to dry to permit the flow of traffic, and periodic reviews were made over a period of several months to determine the effectiveness and legibility of the marking. Based on this survey, award was made to the bidder offering the lowest cost and most effective product, the award being based on all factors.

We have been using these specifications with minor variations for a number of years and we have secured good competition.

Our many years' experience with pavement marking materials has established that there is a definite need in the District of Columbia for both paints and plastic pavement markers. Undoubtedly, this condition will continue for many years at least. In the very near future we hope to make one substantial improvement in the purchase of pavement marking materials, and that is to consolidate all types, including paints and composition pavement markers, in a single invitation, and to subject all items to the same tests at the same location and under the same

Why over ~~700~~ 1000 cities and counties get better signing at lower cost



With a vacuum applicator in your sign shop, you can make all types of professional traffic signs for roads and streets—reflective signs that guide motorists safely and surely day and night.

Fabrication of professional traffic signs with an automatic vacuum applicator is the method now in use by over seven hundred cities and counties to get better signing at lower cost.

The starting point for savings is refurbishing old signs right in your own shop. You can give your old signs new faces in a matter of minutes in an applicator...and actually, you can switch over to red stop signs for as little as $3.60 per sign.

For additional savings, look at those projects you have wanted to start but, perhaps, put off because you thought they might be too costly. Projects like new reflective street name signs, hazard markers—distinctive trailblazers and guide signs that direct motorists day and night for city parkways or county roads. Faces for these signs can be made to order for you at lower cost than you think. All you have to do is apply the face to your sign blank in your applicator. Takes only five minutes.

For instance, you can reflectorize street or road name signs in a 3′ x 4′ applicator that turns out 10 or more of these 6″ x 24″ signs every five minutes.

Or you can make 8″ x 36″ bridge end markers to reduce the danger of darkness with any bridge hazard in your area—for as little as $1.95 per marker face.

Important, too, is the fact that operating an applicator is so simple you don't need specially trained men to make reflective signs. Production is fast—so you won't need extra people in your sign shop even during the busy spring season. When maintenance crews are idled by weather conditions their time can be more fully utilized by sign making jobs in the shop.

Vacuum applicators are available in a variety of sizes—including this new, table top "Economist" model. Designed for small shops, it produces nine 24″ x 24″ reflectorized signs per hour at low cost.

Your 3M Representative can tell you more about how to get the most out of your vacuum applicator—to put more into your signing program. You can get complete information by writing: 3M Company, Dept. RKB119, St. Paul 6, Minnesota.

Anyone can operate a vacuum applicator—no special training is needed. You can make signs any time you need them—and give your community better safety with better signing at low cost.

MINNESOTA MINING AND MANUFACTURING COMPANY
...WHERE RESEARCH IS THE KEY TO TOMORROW
St. Paul 6, Minnesota

REG. U.S. PAT. OFF.
SCOTCHLITE
BRAND
REFLECTIVE SHEETING
The term "Scotchlite" is a registered trademark of 3M Co.

conditions as we have successfully employed in our traffic paint purchases.

In this way, we hope to arrive at factual determinations based on (1) the time required to apply the marking, (2) the amount of time before traffic can move over it, (3) labor costs, (4) material costs, and (5) effectiveness in use, all based on the annual time and cost factor on all types of marking materials.

The progress we have achieved in this field, and in all others for that matter, is based on a realization that we must seek progressive improvement rather than drastic change unless conditions are so severe that drastic change is the only answer. To achieve these improvements there must be mutual understanding and cooperation between the user and the procurement official. Also, there must be a common goal for public purchasing executives to stimulate the production of better products to meet today's and tomorrow's conditions.

With this emphasis on ultimate cost of a product rather than initial cost, we contribute to the progress of American industry in developing the best materials for the job. Among them we hope some day to find a traffic marking material which will last indefinitely. Until that day, the District of Columbia will try to buy a more legible, longer lasting product, which costs less to apply and provides a shorter period of traffic interruption, at a lower price on each subsequent purchase.

Keeping Parking Meters Working

In Cedar Rapids, Iowa, 2232 Magee-Hale Park-O-Meters offer seven different periods of parking time —12 and 24 minutes, 1, 2, 3, 4 and 10 hours—and rates, 1 cent for the shortest times, to 2½, 5 and 10 cents per hour.

The 1637 street meters collected $149,610 in 1958 and the 595 off-street meters in seven parking lots collected $51,054, for a total of $200,664 and $90 per meter.

Servicing included 1500 meter cases cleaned inside and out, 282 mechanisms cleaned, time changed on 409 meters, 460 timers replaced, and numerous other minor adjustments. Also, 484 new posts were installed, and 314 posts straightened, reset or removed.

Beverly Hills Installs Bus-Stop Shelter

The City of Beverly Hills, Calif. has installed a shelter at one of its more heavily used bus stops, as an added public service and as a pilot study for possible installation of other such bus stop shelters. The installation was made by the city public works personnel. Since the project was entered into by Apex Steel Corp., Ltd., and Reynolds Metals Company, as a promotional enterprise, the cost of this experimental model was relatively low. However, future models will be fabricated at a cost of approximately $1,600 each in lots of ten with the price changing for quantities of greater or lesser numbers.

The design is one selected from a group of 80 submitted by architectural students from the U.S.C. School of Architecture in a contest sponsored by the City of Beverly Hills in 1958. The City Council appointed an awards selection committee of three. The original entries were evaluated by the awards committee and twelve models were selected for display in the lobby of the Beverly Hills City Hall. After this public display, the committee met again and awarded prizes to the first, second, and third place models; three others were given honorable mention. These selections were approved by the City Council and, at a subsequent council meeting, the Mayor and City Council presented the awards in the form of architectural books and certificates of merit.

The City Council ultimately selected one of the top designs for construction on the basis of appearance, economy of construction, utility, durability, economy of maintenance, and adaptability to diverse locations. The entry selected for construction was designed by Hendrik de Kanter. While the shelter has little occasion to protect patrons from rain in Southern California, it does provide daily protection from the sun.

The city's choice of 80 entries.

Construction details are available from Apex Steel Corp., Ltd., South Eastern Ave. & E. Slauson, Los Angeles, Calif.

HARVEY L. HURLBURT
Assistant Adminstrative Officer
Beverly Hills, Calif.

NOW NEW STREET SIGNS

...HIGHEST VISIBILITY 24 HOURS A DAY...PERMANENT!

Ferro offers a startling new reflective street sign, completely effective because:

- **Visible day and night.**
- **Broad angle night-time brilliance (glass spheres giving both wide and distant reflection, fused to porcelain enamel sign surface, assure this extra visibility without fading, for the life of the sign).**
- **Maximum readability (crisp, sharply embossed letters of black against pure white; easy to read day or night, all weather).**
- **Ever bright (porcelain enamel stays clear and clean always, in any climate, any weather; cannot fade).**
- **Permanent (inorganic spheres, inorganic pigmented porcelain enamel and steel plate are inseparably combined for decades of trouble-free, fade-proof, weather-proof service).**
- **Beauty (handsome simplicity of design clearly visible day or night).**
- ***Low cost (the most economical and practical street sign ever offered; little or no maintenance).***

"Ferro"—the sign of good government

FERRO ENAMELING COMPANY

All these Qualifications

are combined in this, the greatest advance in street signs since Ferro's original porcelain enamel street marker! Write today for specifications and prices.

1100-57th AVENUE
OAKLAND 21, CALIFORNIA

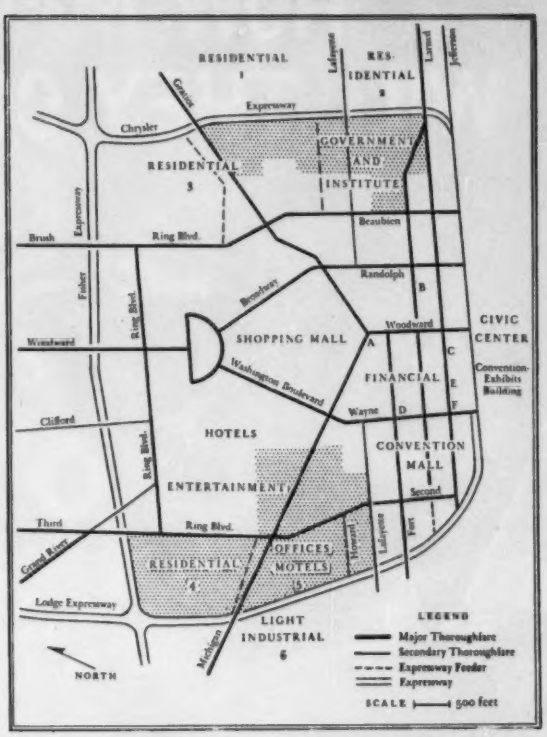
Detroit's Ringed Business District

The plan for the central business district of Detroit, Mich., can be seen from the accompanying map. The central business district is formed by the expressway ring. Traffic is brought off the expressways and the radial thoroughfares penetrating the expressway ring, to adjacent parking facilities or onto the boulevard ring (within the expressway ring) for further distribution to parking facilities.

Within the boulevard ring and convenient to its parking facilities are the central retail business area and related financial and entertainment facilities. Outside of this core area and between the boulevard ring and the expressway ring are other related uses: to the south is the civic center, on the west is the Convention Mall, on the east the governmental and institutional center, and on the north are locations for downtown dwellings.

Work on the expressway system relating to the central business district is well underway. The John C. Lodge Expressway, forming the west link, has been in use a number of years. Extending in a northwest direction it will, in a few years, connect with an expressway leading to Lansing, the state capital. Late this year, the Lodge link (under the Civic Center Exhibits Building) to Jefferson Avenue on the south of the central business district will be completed.

Part of the improvement of Jefferson Avenue has also been completed. Construction has begun on the east side expressway, the Walter P. Chrysler. Since a portion of the route was cleared several years ago as part of an urban renewal project, construction is moving fast in this area. This route will link up with Jefferson Avenue also, at the southeast corner of the central business district. The Fisher Expressway, which will cross the central business district at its north boundary, is slated by the city to be the next route to enter the construction phase.



The sketch shows the thoroughfare plan for Detroit's central business district.

CARL W. ALMBLAD
Principal City Planner
Detroit City Plan Commission

EDITOR'S NOTE: This is an extract from "Some Traffic Factors in the Central Area Development" in the July 1959 *Traffic Quarterly*, published by the Eno Foundation for Highway Traffic Control, Saugatuck, Conn.

Reflectorized License Plates

Michigan is the latest of eight states to provide motorists with reflective license plates and, for the first time, front license plates may be read at night even in the glare of the vehicle's headlights.

There are two methods by which license plates are reflectorized, both of which are accomplished through the addition of a relatively inexpensive applicator to existing equipment. The plates may be surfaced with Scotchlite made by Minnesota Mining and Manufacturing Co., or coated with beads supplied by Prismo Safety Corp. Three states (Louisiana, South Dakota and Wyoming) use the reflective bead system; the other five (Michigan, Maine, Delaware, Minnesota and North Dakota) use reflective sheeting.

Reflectorization for license plates costs up to 28 cents additional per plate, depending on the treatment. In general, the brighter and more durable the reflectivity, the more it costs. An extremely durable reflective sheeting is available for states with "permanent" plates—such as Maine, which uses the same plates for five years.

Reflectorized front license plates may be read at night even in the glare of the headlights.

Non-Reflectorized Pavement Markings . . .

HOW MANY LIVES WILL THEY COST TONIGHT?

The cost of reflectorizing pavement markings is extremely low . . . when you consider the lives that may be lost without it.

It is our firm belief that any stripe worth laying is worth reflectorizing. A great many traffic engineers hold this same view . . . and use Cataphote Reflective Traffic Beads to accomplish this purpose. Their records of reduced nighttime traffic fatalities . . . their records of longer marking life . . . prove it has been a wise investment.

If you'd like more information on Cataphote Reflective Traffic Beads . . . what you can do with them . . . what they can do for you . . . write today.

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TOLEDO 10, OHIO / JACKSON, MISSISSIPPI

Manufacturers of CATAPHOTE REFLECTIVE BEADS • CATAFLEX REFLECTIVE COATING • CATALINE REFLECTIVE STRIPING
CATATHERM REFLECTIVE PLASTIC STRIPING • TRAFFIC SIGNS • STREET NAME SIGNS

Parking and Street Capacities

In any city the parking problem makes its first appearance in the central business district when the curb is no longer able to accommodate parking demand. The table indicates that the total demand for curb space exceeds the regulated curb supply in the average city before its population reaches 10,000. In the largest cities seven or eight persons seek to park, at the peak, for every curb space available:

Supply of Curb Space

	Number of Cities	Average Number Curb Spaces	Peak Parking Accumulation*
5,000- 10,000	2	710	490
10,000- 25,000	18	1,012	1,188
25,000- 50,000	16	1,598	1,950
50,000- 100,000	5	3,018	4,450
100,000- 250,000	13	2,475	4,130
250,000- 500,000	8	3,324	9,140
500,000-1,000,000	4	2,933	13,590
Over 1,000,000	3	3,335	25,160

*At all types of spaces.

A shortage of parking space in the central business district creates competition and contributes heavily to traffic congestion.

Business cannot exist without transportation and transportation requires movement. But movement needs terminals, places to park at destinations. Streets are primarily intended for travel and a basic policy should be that whatever part of the street is needed for traffic must not be used for parking.

No reasonable use of streets for parking should be prohibited or restricted until traffic demands become pressing. It should be remembered that the first purpose of the streets, however, is to move traffic.

Since World War II, unprecedented growth in size and number of neighborhood and suburban shopping centers, usually with generous provision of parking space, has focused attention on "decentralization," decay of downtown areas, and decline in property values. Much of this trend is ascribed to the inadequate supply of parking space.

Downtown stores are losing some business to shopping centers and are not gaining business as fast as the suburbs. But they are gaining. A large proportion of downtown shoppers come by public transit and some of the downtown rejuvenation may come from new ideas in mass transit facilities.

It appears that downtown parking spaces are worth from $15,000 to $20,000 each in annual retail sales in cities from 10,000 to 100,000 population. Many examples indicate that added parking spaces have a beneficial effect on downtown property values.

In Quincy, Mass. the city in 1950 built a parking lot with more than 500 spaces in the rear of stores in the center of the business district and reports that in neighboring stores retail sales increased as much as 80% and that store personnel more than doubled. One store reported a 60% increase in personnel and a 158% increase in sales. The layout of the facility is shown on page 949 of *Municipal Index* 1954.

Highway capacity studies, reported by the Highway Research Board and the Bureau of Public Roads, provide specific data on the effect of curb parking on highway capacity for handling moving traffic, as shown in the following table:

Practical Capacities for Downtown Streets
(Total Vehicles Per Hour)

	Curb parking (allowed*)		Curb parking (prohibited)	
Street width between curbs	Left turn allowed	Left turn prohibited	Left turn allowed	Left turn prohibited
39 feet	450	500	900	1000
40	750	850	1400	1500
50	1000	1100	1800	2000
60	1250	1350	2200	2400
70	1400	1550	2500	2800

* Parallel parking.

These data are based on time signals showing green 60% of the time, with commercial traffic averaging from 5 to 15% of the total volume. A 40-foot street without parking can accommodate as much traffic as a 70-foot street with parking.

Some large cities have found it advisable to eliminate curb parking in the core of the central business district, at least during the business day, to expedite traffic movement. These cities have extensive mass transportation facilities and some have fringe parking lots with shuttle-bus or other transportation to the business district.

Philadelphia, in 1952, placed a strict ban on curb parking in more than one hundred downtown blocks, effective six days a week from 8 a.m. to 6:30 p.m. Bus speeds have risen 7.5%, accidents have decreased 10%, and private car speed has increased nearly 50%.

An Invitation To Check Speed

It is called "Speed-Minder" and it permits motorists to check the accuracy of their speedometers. Large, legible numerals and letters can be readily seen by following motorists, and the illuminated translucent dial is eye-catching at night. The device is made by National Safety Co., 16 Arlington St., Reading, Pa.

4 Big Reasons Why — HOLOPHANE REFRACTORS are Preferred by Major Street Luminaire Manufacturers

GENERAL ELECTRIC

JOSLYN

LINE MATERIAL

PENNSYLVANIA ELEC. MFG.

WESTINGHOUSE

WHEELER FULLERTON

Every Holophane Refractor is quality-controlled and inspected to assure these features:

1 Unique Prismatic Design
engineered into each refractor for the specific street lighting use

2 More Light Concentrated
on the roadway and sidewalks

3 Light Correctly Distributed
with higher pavement brightness

4 Greater Visibility Distance
—more illumination per dollar

Write for Engineering Book on New Street Lighting Practices

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Lighting Authorities Since 1898 • STREET LIGHTING DEPARTMENT • NEWARK, OHIO
THE HOLOPHANE CO., LTD., 418 KIPLING AVE., SO., TORONTO 18, ONTARIO

For Better Street Illumination...Specify Holophane Refractors

Gramatan Avenue in Mt. Vernon is cheerful and sharp in the light of General Electric's Form 406 S fluorescent luminaries.

The Old Lady Said It All

By CIRO COSCHIGANO
Street Lighting Superintendent
Mount Vernon, N. Y.

Fourth Avenue, Mt. Vernon's main shopping area, dressed in fluorescent lighting.

"I've heard so many people say such nice things about our new lights, more than about anything else that's ever happened in Mt. Vernon." That tribute came from an old lady who has spent all her life in Mt. Vernon, N. Y.

The area is the business district and the streets are Gramatan Avenue and Fourth Avenue. The lights are General Electric fluorescents. There are 55 units spaced 60-70 feet staggered on Pfaff & Kendall standards. Their 21,400 lumens replace 3500-lumen incandescents.

The intensity is six times the former value, with electricity cost merely doubled.

Aware for some time that the downtown area needed brightening, city officials took the first step in the spring of 1956 with a trip to Bristol, Conn. to observe fluorescent street lighting installed. Included in this group were myself; Albert Annunziata, Commissioner of Public Works; Paul Brienza, City Engineer; G. Bantz, Chairman of the Street Lighting Committee; and P. Bordas and the late F. U. Martelon of the Consolidated Edison Co., Mount Vernon.

City officials expect reductions in the after-dark traffic accident and petty-crime rates in the area. Merchants report that the new lighting has helped bring out evening shoppers and adds attractiveness to store window displays. Chamber of Commerce officials point out that the brighter lighting makes the community's progressive spirit visible by night, as it is by day.

Since 1946
the City of Chicago
has installed...

141,800

UNION METAL STREET LIGHTING POLES

Experience, acceptance, attractive design—these are the reasons why Union Metal is first in lighting pole sales throughout the nation.

Monotube Lighting Poles

UNION METAL

The Union Metal Manufacturing Co.

Canton 5, Ohio • Brampton, Ontario, Canada

Chicago Floodlights Its Lakefront

Illuminated by banks of brilliant spotlights, the pillars and steps of Chicago's Shedd Aquarium lend emphasis to this night view of the city's downtown skyline. Mounted atop 20-foot poles placed around the structure, the lights were supplied by the Pyle-National Company's Steber Division, Chicago.

The natural and man-made beauty of Chicago's lakefront burst into night-time brilliance this summer as the city's major public buildings were illuminated by an array of powerful outdoor lighting. The idea was to have the display in time for the summer Pan American Games, the International Trade Fair and the opening of the St. Lawrence Seaway. Among the famed buildings are the Chicago Museum of Natural History, the Shedd Aquarium, the Art Institute and the Chicago Park District Administration Building. Chicago's Mayor Richard J. Daley threw the switch which bathed buildings in light. One of the biggest problems facing the electrical engineers was finding a suitable method of illuminating architectural limestone—for all of the buildings were built of that material. As pointed out by Arthur R. Lemke, electrical engineer for the Park District Administration Building, "It is the nature of limestone to reflect a rather cold and eerie cast when illuminated by mercury vapor or fluorescent fixtures. On the other hand, it was difficult to find a way to achieve the required foot-candles economically through incandescent types."

Lemke explained that the problem was compounded by the modern well-and-column design of the building.

The same type of problem was met at the Ionic-styled Shedd Aquarium (illustrated here) according to the building's chief electrical engineer, W. J. Butler.

The engineers report that a solution was found in a combination of high-powered incandescent floodlights and directional-beam spotlights which achieved the necessary foot-candles and also reflected the red end of the spectrum, required to lend warmth to the limestone.

For the Park District Administration Building, Lemke reports, 20 Pyle-National 1500-watt floodlights were installed at the bottom of the wells at an 80-degree angle to illuminate the limestone surface. In addition, close range lighting of the entrance area was achieved through the installation of 39 500-watt PAR lamp spotlights, produced by the Steber Division of Pyle-National, Chicago.

Butler reports that, in addition to lighting the hexagonal surface of the building without shadows, there was an additional problem at the Shedd Aquarium. This was the vulnerability to vandalism, precluding the installation of lights at ground level. He states that when several types of fixtures were tested on a pole-type mounting they proved ineffective in brightness. However, says Butler, a plan was devised whereby special floodlights enabled multiple cluster mounting on six poles to achieve an even pattern of high intensity.

The clusters combined 300 and 500-watt lamps with fixtures of both wide and narrow beam. A total of nine fixtures were mounted on each 20-foot-high polebank. The poles were placed 42, 36 and 50 feet from the building surface, depending on the angle desired and on landscaping limitations.

Glare Meter for More Effective Lighting

A new lighting test device aimed at saving many of the lives lost annually in night-time automobile accidents has been announced by the Illuminating Engineering Research Institute. The Disability Glare Meter is being used by the Institute's study team in tests to determine the most effective roadway lighting systems for various conditions. Dr. Richard Blackwell heads the three man team from Ohio State University's Institute for Research and Vision. The new instrument is used in conjunction with a visual task evaluator which helps determine how difficult it is to see a roadway object.

"We needed a constant factor like the disability glare meter since this factor varies from individual to individual. Normally young people are not bothered nearly as much by glare as are older people," Dr. Blackwell stated.

"Most people don't realize that just any street lighting is not always beneficial. We are trying to determine how much light the human eye needs for various tasks while driving. Naturally higher light levels are needed for some driving situations as opposed to others where the light level might be very low."

He pointed out that under certain conditions a dark object would show up much better than a light one. During the tests model black and white poodles were used as targets to prove this point.

MacArthur Causeway is shown lighted by mercury vapor luminaires with incandescent unit in the left foreground; the view is northwest from Miami Beach.

Well Lighted Miami Beach

Miami Beach has been relighted during the last eight years. We have approximately 3,500 steel standards with pendant incandescent luminaires with bulbs having an intensity of 4,000, 6,000, and 10,000 lumens. In addition, we have 1,000 luminaires on wooden poles, having lamps of mainly 4,000 lumen intensity, and 500 old-type upright ornamental street lights of 1,000 to 2,500 lumen intensity.

The only mercury vapor street luminaires in the City of Miami Beach are on the easterly viaduct of the MacArthur Causeway, which connects Miami with Miami Beach. This viaduct is approximately 2,000 feet long and is new, having replaced one which was constructed many years ago.

Completed a year ago by the State Road Department, the structure has 34 luminaires. The lights have been turned over to the City of Miami Beach for maintenance and operation. They are mercury luminaires manufactured by Nepo Mfg. Co., 4230 North Sayre Ave., Chicago 34, Ill., mounted on aluminum standards manufactured by Hubbard Aluminum Products Co., Pittsburgh, Pa.

MORRIS N. LIPP, *City Manager*
Miami Beach, Florida

Methuselah Lamps Coming

"Quartzline" long lived 2000-hr lamps, in 500-watt and 1500-watt sizes, never grow dim, according to the General Electric Co. Watt for watt, these are the smallest, brightest, most efficient incandescent lamps.

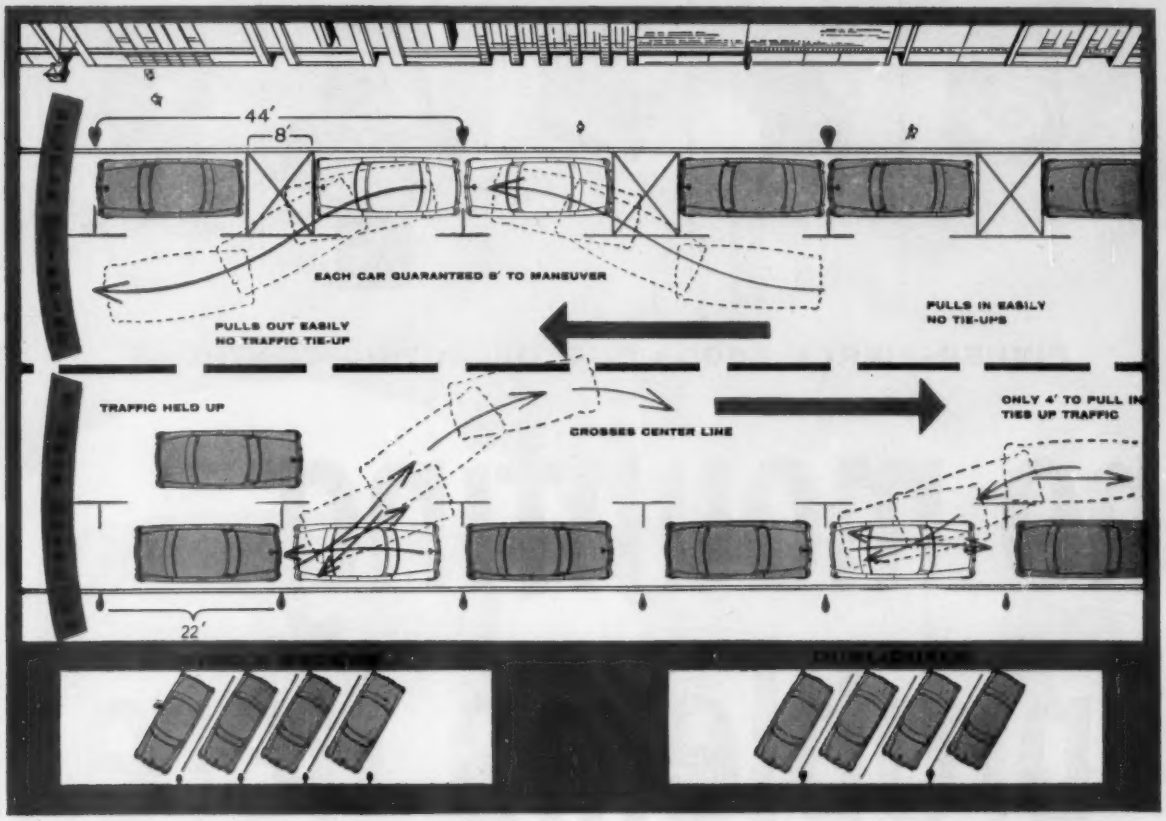
Herman L. Weiss, general manager of the company's Large Lamp Department, said that the growing line of pencil-thin tubular quartz lamps represents the first successful application of a repeating iodine cycle principle to lamp making. It holds promise for outdoor floodlighting and many specialty applications.

The iodine cycle is a regenerative, continuing process which catches the particles of tungsten that evaporate from an incandescent lamp filament and actually puts these particles back on the filament. In other filament lamps, these particles mass on the bulb and and cause a gradual loss of light output. The iodine cycle eliminated this lamp blackening by its action.

If the evaporating tungsten particles could be returned to the filament in a perfectly even coating, theoretically a lamp might never burn out. But since there is no way to control exactly where the tungsten particles return to the filament, one spot will eventually wear out. At this point the filament breaks, ending the lamp's life.

Simple open reflector units using the 500-watt tube throw a rectangular or square beam. These beam patterns can be advantageous in lighting sports fields and in general floodlighting. Other reflectors can produce a rectangular beam only six degrees wide—a stripe of concentrated light. These are expected to be ideal for lighting such things as building facades and golf driving ranges. Smaller iodine cycle lamps only two inches long and mounted in the runway surface, are being tested for lighting airport runways.

HOW TO MAKE THE MOST OF EXISTING PARKING SPACE



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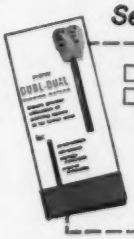

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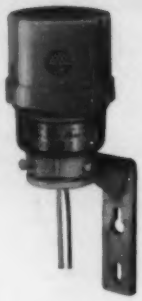
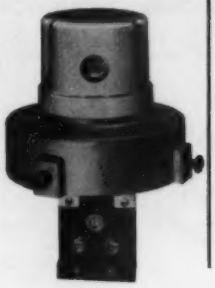
Pole or crossarm mounting . . . Model 6601A



Replacement plug-in for F-P Model S-64400 . . . Model 6604A. (Also, Model 6603A replacement for F-P Model S-64400GE.)

Ornamental pole top mounting . . . Model 6600A with S-485 adapter (adapter also available for poles with I. D. less than 3")



Bracket mounting . . . Model 6600A with S-487 clamp assembly.

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For complete descriptive details, write for the 8-page Detailed Technical Bulletin, no. FP-830. The Fisher-Pierce Co., 94 Pearl St., So. Braintree 85, Mass.

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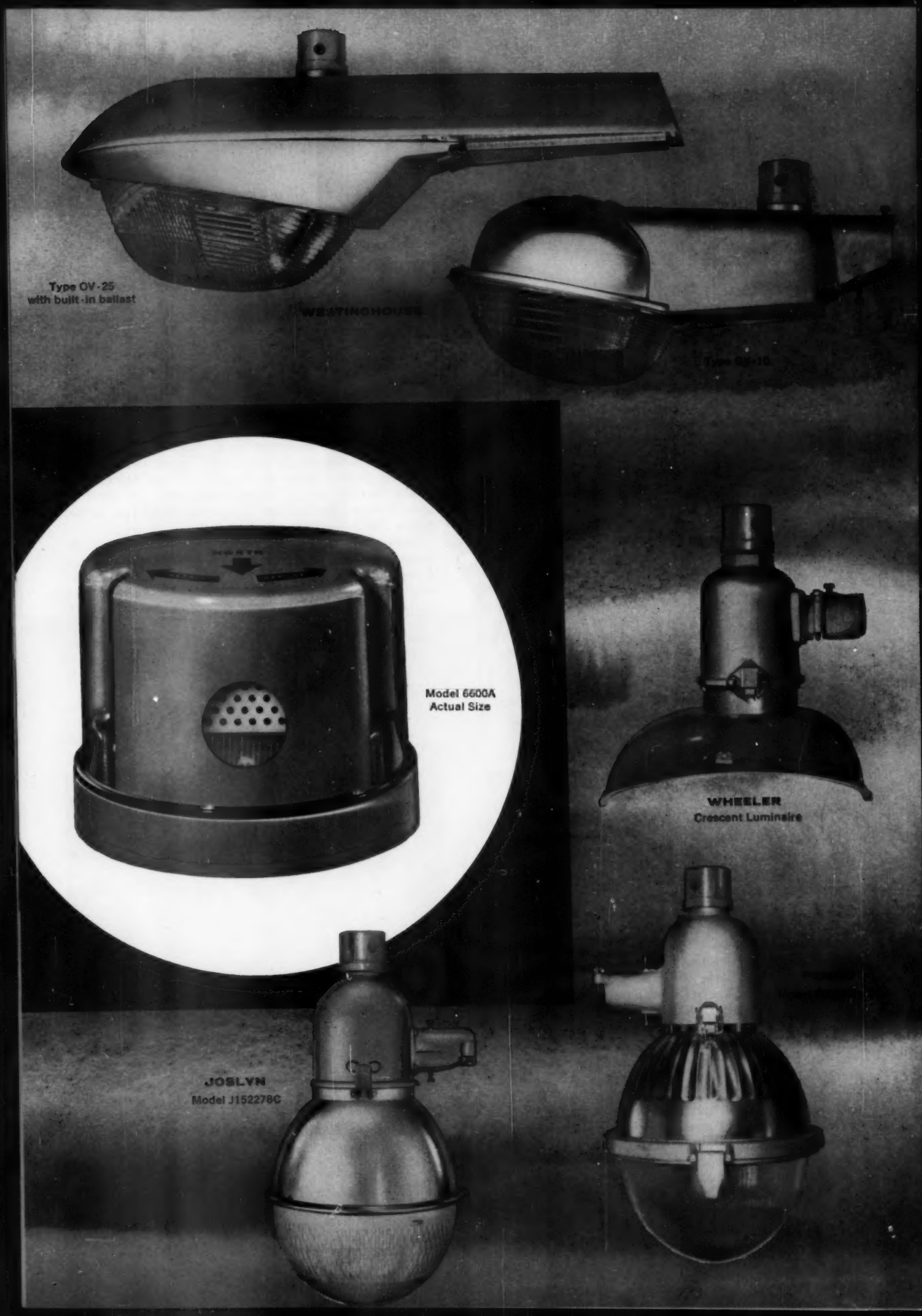
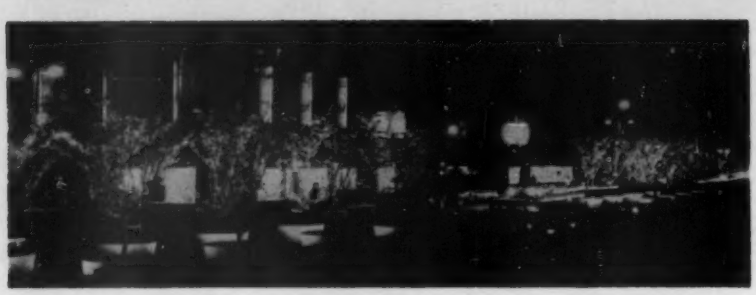

Type OV-25
with built-in ballast
WESTINGHOUSE
Model 6600A
Actual Size
WHEELER
Crescent Luminaire
JOSLYN
Model J152278C



Three block's along New York's Park Avenue received plantings of trees and shrubbery, and unusual illumination from 100-watt mercury vapor reflector lamps in fixtures made specially for the job by the Simes Co., College Point, N. Y.

New Beauty Spot on New York's Park Avenue

Three blocks, 49th Street to 52nd Street, on New York's famous Park Avenue have been planted and specially lighted; on May 26 they were dedicated by Mrs. Robert F. Wagner, wife of the Mayor, and Hulan Jack, President of the Borough of Manhattan.

Uris Brothers, builders of several of New York's newest skyscrapers, donated the cost of the project to the city's "Salute to Spring," a municipal program that encourages private companies to beautify their metropolitan properties through plantings and illumination. The beautification includes planting of trees, shrubs, hedges and flower beds through the center malls that divide the north and south traffic lanes of the street, and illuminating the plantings with mercury vapor reflector lamps.

Sixty-four 100-watt lamps are mounted in clusters of four on cast aluminum transformer boxes. Because the lighting equipment will be exposed to weather all year round, the Simes Co., Inc., College Point, N. Y., made both the light fixtures and the boxes on which they are mounted weather proof. Each cluster of fixtures is positioned underneath the shrubbery and targeted upwards on the leaves and branches. Because the mercury vapor light is rich in blues and greens, the light enhances the shrubbery.

The boxes on which the sets of lights are mounted rest on precast concrete bases that are buried beneath the surface of the planting area. A layer of gravel covers the surface to a point about two inches below the housing for the lamps.

Some particular problems of installation faced the consulting engineers commissioned for the project, Joseph R. Loring Associates of New York, and the electrical contractor, Arc Electric Co. Beneath the surface of Park Avenue run tracks of the New York Central railroad and a whole network of conduits. This prevented conventional installation of cables and equipment for the beautification job.

The equipment supplied by Simes for this job is similar to the mercury vapor reflector lamps used for fountain and area lighting at New York's Idlewild International Airport.

Fluorescents Brighten Faribault

At the gateway to the Ten Thousand Lakes region stands Faribault, Minn., with its clean, wide streets and its many nearby recreational facilities. This city of 18,000 covers an area roughly four miles square.

Recently, 74 fluorescent luminaires were installed in the main shopping area. The aim, of course, is to attract night shoppers, increase safety, and make the city still more pleasing. The lighting system was planned by Northern States Power Co. The luminaires are Line Material four-lamp, deep-globe units capable of emitting 23,000 lumens each.

The street lighting replaced was installed only ten years ago. The incandescent luminaires, rated at 10,000 lumens each, were spaced 100 feet apart along the center line of the street. The lighting level was considered inadequate for modern business districts.

For economy reasons, use of existing poles was desirable. Additional mounting height and a modern appearance were obtained through the use of an ingenious bracket design of the davit configuration, which was constructed to slip over the pole top and fasten securely to it.

Luminaires are set in an opposite arrangement and are mounted 27 feet above the ground. An approximate average light level of 1.5 foot-candles was achieved over the street surface. It is just the beginning for Faribault. Plans are being made to extend modern lighting to the other areas of the city.

The broad fluorescent light source diffuses shadows and makes seeing easier in Faribault.

G. G. WHEELER
Manager, Municipal Sales
Northern States Power Co.
Chicago, Ill

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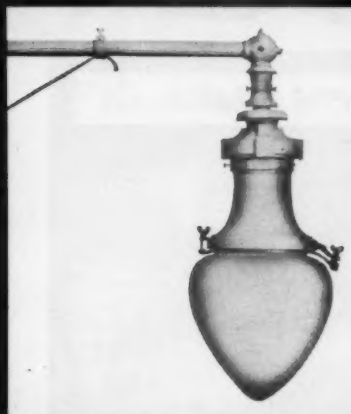
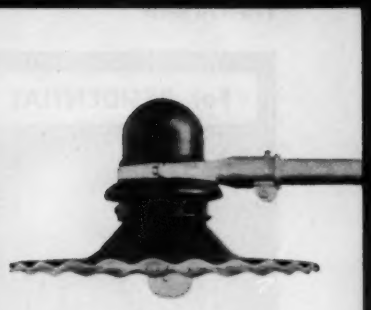
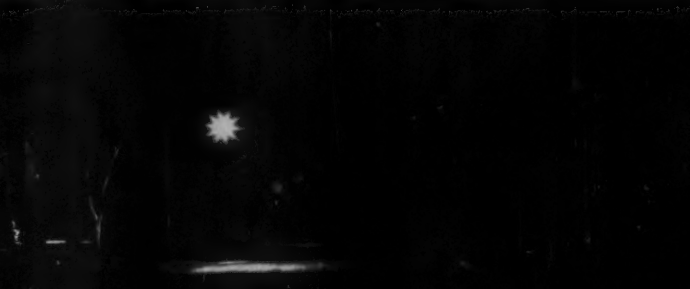




and your streets look like this . . .



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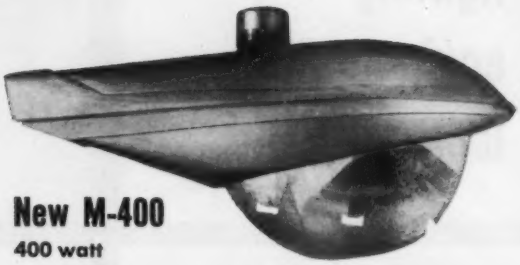

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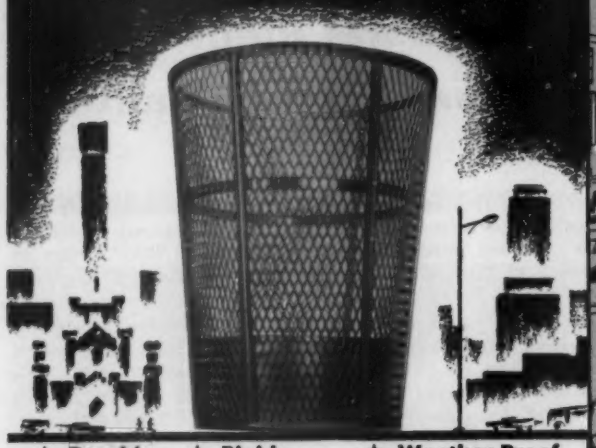

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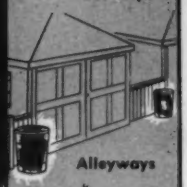
Alleyways

Along the Highway

Public Parks

Street Maintenance In San Francisco

(Continued from page 115)

surface evenness, erosion of fines and cracks and patches. General appearance and traffic volume enter the picture in borderline cases. Street condition rating is a matter of personal judgment, for we use no mechanical devices.

Annual inspection is necessarily cursory but sufficient to assure that all resurfacing is warranted and substantially limited to streets most badly in need.

Once adopted, we pursue the program as systematically as possible to avoid across-town moves.

Most streets can be resurfaced without preparatory work. Where necessary, however, high spots, badly broken pavement and curled edges at cracks are removed and cracks sealed before the resurfacing crew arrives. Low spots and holes, unless extensive, are filled by the resurfacing crew but in advance of actual resurfacing work. We sometimes use a heater-planer, particularly where gutters are shallow and resurfacing is to extend to the curb.

The machine crew (see chart for makeup) is somewhat larger than normally used by contractors for the following reasons:

1. All employments are civil service with fixed salaries with no provisions for absentees. The crew is often short one or two men.

2. Jobs are small, requiring from one to four moves per day. This requires sending men ahead to set barricades and assure a clear street to eliminate delay once the crew arrives.

3. "Feather-edging" creates a considerable amount of loose rock that must be cleaned up. All hands assist in cleaning up as time permits.

Crews and Duties

Small, semi-specialized crews have been found most satisfactory. They can be combined as necessary to accomplish given jobs. One crew may assist two or more other crews during any day. Composition of the various crews is as shown on the accompanying chart; duties are:

Machine Resurfacing Crew: This crew spends about 50% of its time on machine resurfacing and the balance on general repair of asphaltic pavements. While engaged in general repair, two operating engineers and at least two chauffeurs are assigned to other crews or duties and a truck-mounted compressor is sub-

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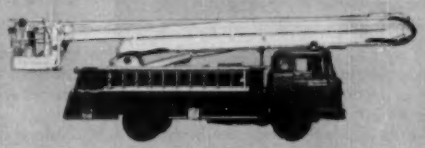

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N.Y.S.E.& G. found 1½" conduit gave a saving of 15¢ per foot installed. Material costs were reduced further when conduit size was reduced to 1¼" and standard bases were fed by locally made long-radius bends. Additional savings resulted from the fact that conduit breakage during handling was eliminated, and KRALASTIC's light weight made it possible for a standard line truck to carry a full day's supply of conduit, eliminating the need for on-site storage and attendant problems.

Strength, light weight, and resistance to corrosive soils and chemicals are among the reasons why KRALASTIC has been steadily gaining popularity over both metals and other plastic materials not only for electrical conduit, but for municipal and home water service, well piping, salt water disposal, oil, gas, and chemical lines, radiant heating installations, piping applications by the hundreds.

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stituted for a dump truck. One chauffeur and two asphalt workers operate as a compressor crew and the remainder alternate as a clean-up crew and paving crew.

We pursue surfacing and general repair as continuously as possible.

Hand Resurfacing Crew: Although extensive resurfacing is no longer done by hand the title is retained for identification. This crew spends about 75% of its time on general repair of asphalt pavement; 15% on hand resurfacing; 5% resurfacing with our Watson-Cmetco Rola Paver (spreader box); and 5% working for other departments.

This crew may be augmented by the addition of one roller with operator and one or two trucks with chauffeurs. In most cases, pavement removal is done by another crew, permitting this crew to operate strictly as a paving crew most of the time.

General Repair Crews, Asphalt: These three crews work strictly as asphalt repair crews. The only change in crew composition is the addition of a power roller and operator when available.

Compressor Crews: The three compressor crews distribute their time approximately as follows:

Operation	Crew No. 1	No. 2	No. 3
Asphaltic pavement repair	100%	40%	....
Reset or replace curb	....	....	90%
Reset street castings (manholes, etc.)	....	30%	....
Mudjack	....	10%	....
Concrete pavement repair	....	....	10%
Miscellaneous	....	10%	....
For others	....	10%	....

Utility Crews: The utility crew assigned to the asphalt division was originally organized for hand-loaded cleanup but has evolved into a "jack-of-all-trades." About 50% of the time, or when an operating engineer is available, this crew is assigned to heater-planing. Otherwise its duties cover a great range.

The utility crew assigned to the concrete division handles mudjacking, resetting of street castings, and sawing concrete pavements for openings or repairs.

Cleanup Crews: These are separated into hand and machine operations. The hand crews are general labor crews assigned to remove broken pavement, hand excavation cleanup and similar work. They usually work with other crews.

The machine cleanup crew, equipped with a three-wheeled Scoopmobile and two dump trucks, is the handiest crew in the organization. However, it works for others most of the time, with probably less than 10% of the time devoted to street repairs.

Concrete Repair Crews: These crews make repairs to any concrete structures or street appurtenances in street areas other than sidewalks in front of private property. They also construct traffic islands and place raised-pavement bars for traffic channelization.

Curbsetting Crew: About 80% of this crew's time is devoted to resetting concrete and stone curb that is out of alignment. About 20% of the time goes toward replacing stone curb that has been damaged.

Sealing Crews: These crews devote most of their time to crack filling with surface sealing confined to minor patches. We hope to equip one crew to apply slurry seal over newly heater-planed areas.

Municipal Asphalt Plant

The city owns and operates a Madsen Iron Works batch mixer type asphalt plant of 90-tons-per-hour capacity at a one-minute mixing cycle. Asphalt and aggregates are delivered by rail, with cars spotted on one or both of the plant's two side tracks and moved to position by a drum-and-cable car pusher.

Plant capacity is greater than required over an extended period of time, but with four crews each waiting for from six to nine tons and one crew in a position to use more than 50 tons per hour, the greater capacity pays off in getting the crews to work quickly and in reduced overtime.

Plant crew is shown on the chart, except that one additional laborer assists in unloading and bunkering aggregates during periods of high production.

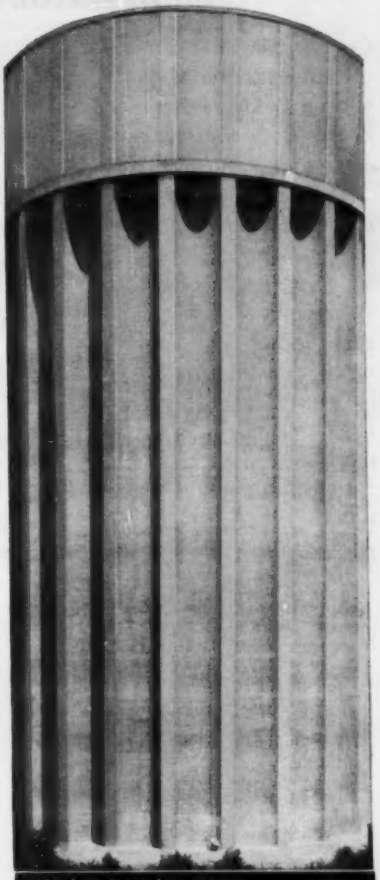
Mixtures produced and their composition are shown in Table I on page 115.

Aggregates are screened into the four "hot bins" from a combination of fine-graded sand, coarse-graded sand, ⅛" x ¼" gravel, ¼" x ½" gravel and ½" x ¾" gravel.

We are constantly trying to keep ahead of rising costs. Labor costs as of June 1959 are listed in the table. Table II lists prices, also as of June 1959, for some of the more

(Continued on page 151)

MORE THAN 2000 PRESTRESSED CONCRETE TANKS IN SERVICE



Look at these features:
- Minimum maintenance
- 75% construction cost spent locally
- Satisfied owners
- Longest service life of any tank
- Lowest overall cost

Send for Bulletin T-22

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HERRICK IRON WORKS
28400 Clawiter Road
Hayward, California

THE CANADA GUNITE COMPANY, LTD.
7325 Decarie Blvd.
Montreal 16, Canada

AIR BRAKE

Still another reason for the enthusiastic demand for Mack fire apparatus

On your next fire apparatus specify air brakes!

Air brakes on Mack apparatus cost less to maintain than hydraulics. They're installed by craftsmen with the most intimate knowledge of such systems.

Air brakes on Mack apparatus provide safe, sure stops . . . ten-second build-up for immediate operation . . . minimum time lag before brakes take effect.

Steering stays under control in slippery going, thanks to selective braking which halves front brake pressure.

Air's the answer, too, to braking combination ladder trucks—emergency and tractor valves protect both units.

Heart of the system is the Mack *exclusive* gear-driven compressor, whose dependable, positive drive eliminates the problem of breakage inherent with belt-driven compressors. It pumps 12 cu. ft. per minute at 65 psi, effortlessly supplying all air equipment, as well as brakes.

Separate emergency tank and low pressure warning system guard against unnoticed air loss, and use of air does away with the possibility of destroying brake linings with fluid from leaking hydraulic cylinders.

Join the swing to Mack apparatus . . . get all the benefits of custom design, Mack Thermodyne® engine power and the Mack torque converter transmission, plus air brakes. Mack Fire Apparatus, Allentown, Pennsylvania. In Canada: Mack Trucks of Canada, Ltd., Toronto, Ontario.

LEADERSHIP

MACK

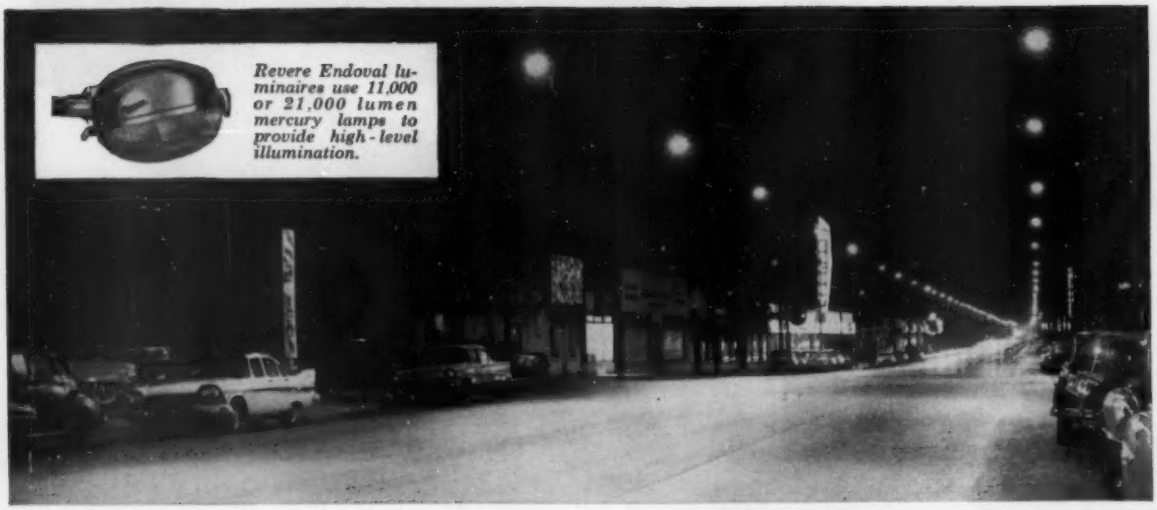
FIRST NAME FOR

FIRE APPARATUS

COMPLETE LINE OF PUMPERS—500 to 1250 GPM • SQUAD AND HOSE WAGONS • AERIALS 65' to 144' • COMBINATION LADDER TRUCKS 7326

Daytime scene of heavily-traveled Chicago street with Revere Endoval Mercury Luminaires mounted at 10° tilt, 29 feet above grade, with 83 foot opposite spacing.

REVERE PLANNED STREET LIGHTING



Revere Endoval luminaires use 11,000 or 21,000 lumen mercury lamps to provide high-level illumination.

Wide, busy streets call for high-level illumination. Revere Endoval Mercury Luminaires were especially designed for such applications, to provide high-intensity lighting economically and efficiently. In the installation shown, the average illumination on the black-top pavement is 3 foot candles.

The reversible slip-fitter on the Endoval permits mounting horizontally, or at a 10° tilt, for a variety of street lighting applications. Write for Revere Street Lighting Catalog for full information on fixtures for heavy, moderate, or lightly-traveled streets.

Other luminaires in Revere's complete line

For moderately-traveled streets—Revere Star-Lux Luminaire uses up to 10,000 lumen incandescent lamps, or 250 to 400-watt mercury lamps to meet varied needs.

For residential streets—Revere Urban-Lite makes efficient use of 100, 175, or 250-watt mercury lamps for uniform light in areas where lower intensity light is adequate.

Revere ELECTRIC MFG. CO.

OUTDOOR LIGHTING

Revere Electric Mfg. Co. • **7420 Lehigh Ave.** • **Chicago 31, Ill.**

Available in Canada thru Curtis Lighting, Ltd., Leaside, Toronto, Ontario

(Continued from page 147)

important materials used. Wage rates increased approximately 35% and material prices went up about 30% in the past five years.

The city's charter provides that wage rates shall be the same as those established by collective bargaining between local labor unions and private industry. Labor rates shown in the table are for an 8-hour day, Monday through Friday.

One way of keeping costs down is by reducing the thickness of the surface. This of course requires smaller aggregate and consequently more asphalt. But less material is used per given area, resulting in an overall reduction in cost.

With the advent of the pneumatic roller, minimum thickness is possible. Prior to last year, we averaged 140-145 square feet of coverage per ton. Last year we averaged about 166 square feet per ton.

Space does not permit a description of all work performed, but the more important functions of the Bureau of Street Repair plus crew organization and basic crew duties have been pretty well covered in this article.

Boat Accidents Increasing in New Jersey

Salvatore A. Bontempo, Commissioner of the New Jersey Department of Conservation and Economic Development, in explaining the stricter enforcement of boating controls, explained that "Early in the spring, while marine patrol members were attending refresher courses, we recommended that first offenders with a minor violation should be given a warning. Often a new boat operator is unfamiliar with his boat and the rules of the waterway, so education and information were more important than a summons.

"Unfortunately, our marine patrols find that a small minority of the boating public consistently ignores warnings and safety regulations. Because of these careless operators, we have had to conclude that education and advice are not enough even on minor infractions. Our education program will continue, of course, but the marine patrols have been instructed to 'get tough' in the hope that a summons may now prevent a criminal-negligence charge in the future."

Fast, Low-Cost Ice Control

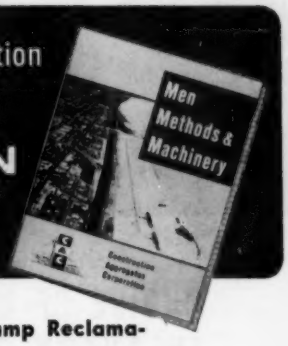
You eliminate treacherous ice from your streets and provide safe protection for your winter-time traffic **FASTER** and **CHEAPER** with straight de-icing salts. The TARCO "Scotchman" is **especially designed** for the correct application of these granular or pelleted materials.

This "Jeep" mounted "Scotchman" uses the **1 cu. yd. "Watchman" Hopper.** Here's enough salt to cover more than **5 miles of pavement, 30 feet wide.** One man operation. Gasoline engine driven or operated from P.T.O. The "Scotchman" spreader has been **job-tested over 10 years** by cities, state highway departments, and industrial plants.

For **emergency ice control** of busy intersections, hills and bridges this "Jeep" mounted "Watchman" Hopper and one man operated "Scotchman" spreader will save you a lot of time and material, and needless traffic tie-ups. See your nearest Tarco dealer . . . or write to us.

TARRANT MFG. COMPANY
23 Jumel Place, Saratoga Springs, N. Y.

Construction Aggregates Corporation
LAND RECLAMATION BROCHURE



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- **Highway and Airport Fills**
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- **Soil Stabilization**
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For imaginative brokers, planning boards, engineers and others interested in the profitable conversion of waste land, Construction Aggregates Corporation now offers a new, informative brochure.

Making land to order has been a C.A.C. specialty since 1916. Since that time, Sensibar Sandfill Methods have reclaimed thousands of acres of swamp, converted unstable soils to create valuable sites for superhighways, airport runways, warehouses, tank farms and land suitable for high load bearing foundations.

Men, Methods and Machinery gives the complete story of C.A.C.'s cost-saving methods which place sandfill hydraulically up to five miles from navigable water at costs competitive with dry fill. It suggests many ideas for residential, commercial and industrial land reclamation . . . tells how inexpensive or undesirable real estate can be converted to yield high profits . . . opens new avenues to the efficient, profitable development of land in the outlying areas of coastal, lake and river cities.

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Among the many reasons for this universal acceptance none is more important than the unfailing dependability of this rugged, yet simple meter . . . proved performance under all climatic conditions, backed by the experience of more than 25 years in the development and application of quality parking meters.

Whatever may be your parking problem, there is a type of Park-O-Meter that will provide the answer.

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Magee-Hale
PARK-O-METER COMPANY
OKLAHOMA CITY, OKLAHOMA
Factories in U.S.A., CANADA, ENGLAND

Garden City's Telephone Fire Alert

. . . gives fast, accurate fire location data to volunteers, using a system first demonstrated in a convention hall

By ALFRED S. KOHART*

Less than a year ago, the first automatic, simultaneous telephone alarm went out to more than 70 volunteer members of the Garden City, N. Y. Fire Department, and on that occasion—as in subsequent calls—many unforeseen benefits resulted. Volunteer attendance at that fire was higher than before but it was believed that novelty was responsible.

However, records since installation of the telephone-alert system show that attendance of volunteer members of the part-paid, part-volunteer fire department has been increased by about 10% during daylight hours and by significantly higher percentages at night.

Garden City is a 6½-square-mile community of approximately 25,000 persons, with three fire stations manned by seven to ten paid fire fighters at all times. Between 70 and 80 volunteers supplement permanent personnel. Apparatus includes two American-La France 1,000-gpm pumping engines, a Seagrave 750-gpm pumper; two American-La France aerial ladder trucks, a Mack hose wagon with a 300-gallon booster tank: a Dodge combination booster and floodlight truck.

It all started in 1955 when Henry D. Sayer, Jr., then chief of the Garden City Fire Department, attended a conference of the International Association of Fire Chiefs in Omaha, Neb. The local telephone company demonstrated a small pilot model of the telephone alerting system for those who attended the convention, and on his return, the chief interested village authorities in an installation for Garden City. Upon investigation, it was found that the equipment was not yet available but New York Telephone Company requested—and received—authorization from the American Telephone and Telegraph Company to expand the development operations.

Until December 1958, the city depended on coded air-horn alarms to bring volunteers to the general location (within six or eight blocks) of the fires, letting activity in the neighborhood pin-point to arriving volunteers the exact fire site. Too often, full-time firemen (informed of the address prior to leaving respective firehouses) arrived at the threatened property, before volunteers—even those living in the neighborhood—could find it.

Things have changed. A full-time fireman is on watch at the central fire station 24 hours. When a fire call is received at this desk, the watch fireman picks up a special phone and depresses a button which puts a telephone company central office "announcement device" on the line.

He then dials the number "5" and gives general alarm information (exact location, type of fire, area and zone numbers). The message is recorded and a flip of a switch starts a continuous repetition of the alarm information for a period of three minutes. At the time he dials the number "5," the telephones in the homes of the 70 volunteer firemen start to ring in staccato bursts, all at the same instant. Those who miss the first message are called for the entire cycle period of three minutes. If there is a busy signal on any one line, the alert "camps on" that line, and if the telephone conversation is completed during the 3-minute cycle, the alert signal will go through immediately.

Once the alarm has been received on an individual phone and the receiver has been replaced in the cradle, the phone automatically goes back into regular service.

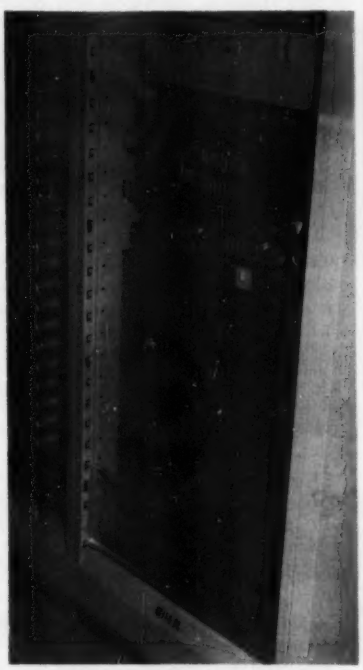
A monitoring system is provided for the alert phone so that the dispatcher, by dialing another digit, may listen to the recording and check it for accuracy.

In Garden City the system also has been extended to the homes of the police chief, the fire commissioner and the operator at the water department pumping station, so that all may be alerted at any hour of day or night in the event of a fire requiring their attention.

With the Garden City system, it is possible to connect up to 480 telephones for alarm notification. Selective alerting is also available, so that by dialing different digits, a single company or rescue squad or any other small group may be summoned.

Since the start of operations under the telephone-alert system, the only way a fireman can miss receiving the signal is by being away from home at the time of the fire call. Consideration has been given to eliminating use of air horns as a fire alerting signal.

The alarm system was developed by engineers of the Bell Laboratories and the Western Electric Co. Bell System affiliates are designing simplified apparatus for the transmission of alarms. The various operating companies throughout the Bell System are now prepared to make it available.



The telephone-alert system is housed in a compact unit installed at the telephone company's central office. As many as 480 individual residential phones can be connected to the alarm system through such a unit.

* Mr. Kohart is the Fire Chief of Garden City, N. Y.

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★ flexibility

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- RESERVOIRS
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Gentlemen: Please have a representative contact me. I am interested in:
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NAME.....
STREET.....
CITY.....STATE.....

Local Government Problem? —Ask Your University

If a local government has a problem the odds are roughly 3:1 that the state university has a research bureau that will help solve it. These university groups are known by names such as "bureau of government," "institute of public affairs" and others. Approximately three-fourths of the states have them. In addition, several non-state-supported educational institutions have privately endowed bureaus.

Some bureaus are extremely modest with small staffs of three or four and a limited budget. Others have a professional staff of a dozen or more, a relatively liberal operating budget, and a broad range of activity.

The Bureau of Government Research at the University of Massachusetts, now less than four years old, is a baby compared to other agencies such as the Kansas Governmental Research Center, established in 1909, or Michigan's Institute of Public Administration which dates from 1914. Nor does the Massachusetts bureau's professional staff of four vie in size with those of the Kansas, Michigan and other agencies located at the larger and older state universities.

Its work, nevertheless, is typical of that performed by bureaus all over the country. As a service organization for towns and cities of the Commonwealth its program consists of research, in-service training and consulting.

An active research program has resulted in an ever-growing series of handbooks to assist local officials, particularly those in small and medium-sized communities, in carrying out the duties of their office. Another phase of research work is directed toward broad issues of government such as planning and taxation.

Hand-in-hand with research activities go the conferences and in-service training institutes by means of which mayors, city councillors, assessors, city managers and other public officials meet on the university campus for two and three days at a time.

University research bureaus often render consulting assistance of a limited advisory nature. In general any detailed consulting similar to that performed by private firms is beyond the scope of a bureau's regular mission and, if required, it justifies a fee. But in the area of normal bureau services, plenty of room still exists for bureaus to offer help without charge.

The Massachusetts bureau probably provides more limited consulting service than other states simply because it has received many requests for this service. The need is great here. Massachusetts local government is conducted by part-time commissions and officers. They are aware of available state services and they ask for them. They themselves are either unpaid or modestly paid. The small communities they represent, with today's high cost of government, cannot always afford the services of private consulting firms.

EDWIN A. GERE, JR.
Bureau of Government Research
University of Massachusetts
Amherst, Mass.

Finalists Vie for All-America City Title

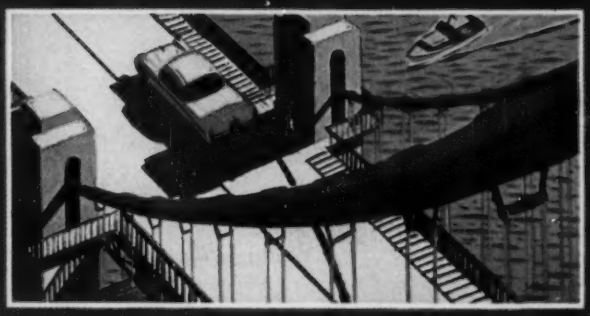
A total of 21 cities from the 50 states and one from the Commonwealth of Puerto Rico will compete in the final round this year for the All-America Cities Awards. The awards competition, now in its eleventh year, is conducted annually by the National Municipal League and *Look Magazine*.

San Juan is the Puerto Rican city which will vie for honors. Honolulu is also in the finals, as the first Hawaiian city ever to enter in the competition. The other finalists are:

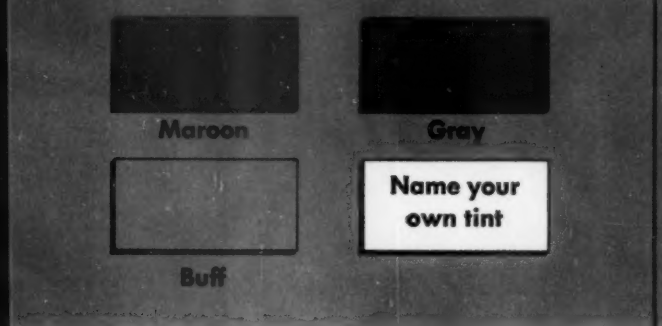
Green Forest, Ark.
Baldwin Park, Calif.
Burbank, Calif.
Santa Fe Springs, Calif.
Vallejo, Calif.
Lamar, Colo.
Alton, Ill.
East St. Louis, Ill.
Sioux City, Iowa
Springfield, Mass.
De Soto, Mo.
Grants, N. M.
Winston-Salem, N. C.
Fargo, N. D.
Lakewood, Ohio
Anadarko, Okla.
Abilene, Texas
Washington Terrace, Utah
Norfolk, Va.
Seattle, Wash.

The cities to compete in the finals were selected from nearly 100 entries.

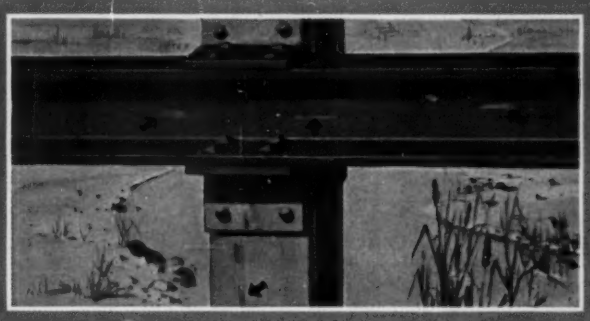
Never before weather-resisting tinted *finishes* that are also rust inhibitive . . .



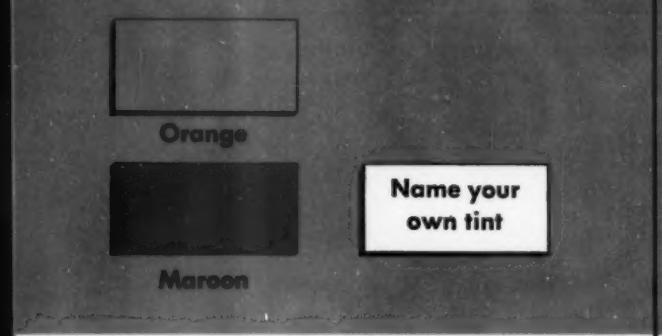
Now you can give steel structures distinctive color . . . or decorative color . . . along with greater durability than ever



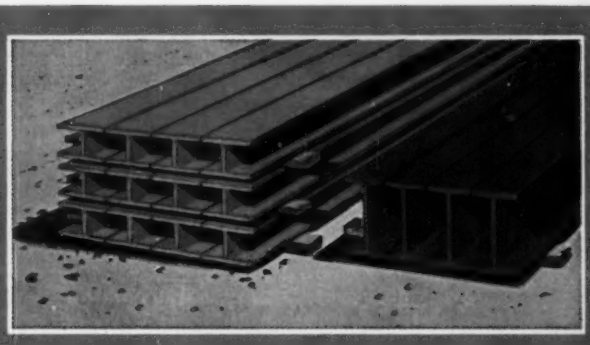
Never before tinted *intermediates* that are *both* weather resistant and rust inhibitive . . .



Now you can specify intermediate colors in sharp contrast and aid visual inspection for "holidays"



Never before anti-corrosive *primers* that are also tintable and weather resistant.



Now you can eliminate on-the-job mix-ups by using structurals shop-primed in *coded* M50 pigment colors

Proof M50 pigment Defense in Depth paints deliver color opportunities entirely beyond those of ordinary anti-corrosive paints

Wide color choice has never before been available in *all* coats of anti-corrosive specification paint systems. Now *M50* basic lead silico chromate pigment* gives you an entirely new color specification freedom . . . in primers as well as intermediates and finishes . . . along with all-coat rust inhibition, all-coat weather resistance. Some of the opportunities this presents are suggested above. You'll think of others.

M50 Defense in Depth

. . . And never before such *durable* color. See next page for proof . . .

➡ ➡ ➡

*Registered trademark of

National Lead Company

General Offices: 111 Broadway, New York 6, N. Y.

For more facts, turn page

A. No visible discoloration from atmospheric conditions

Contrast areas marked **A** in photo (top at right) of paint test panels exposed 18 months. You can see *M50* pigment paint is free of discoloration caused by atmospheric conditions.

B. No objectionable whitening from normal chalking

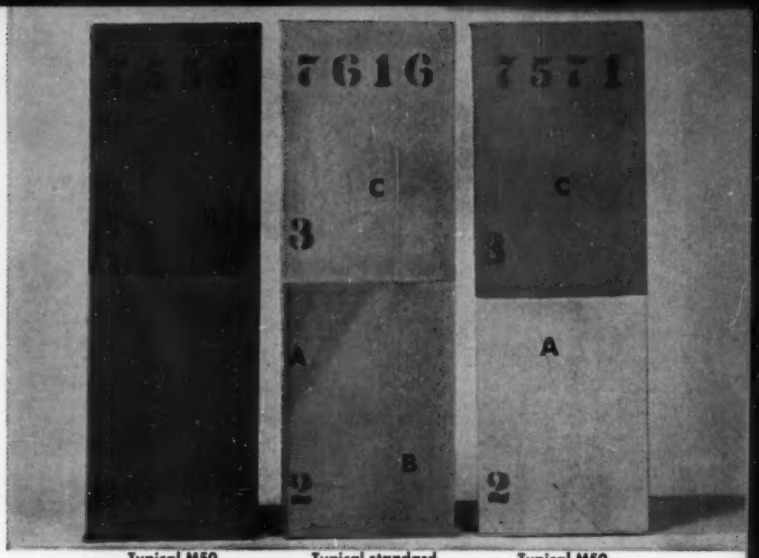
Now compare areas marked **B**. Notice the brightness of color in the *M50* pigment paint. A finger drawn across this paint shows no mark from rubbed off chalk.

C. No noticeable leaching from water action

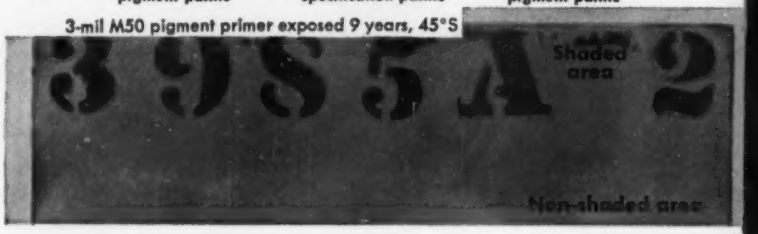
Look closely at areas marked **C**. Can you see where the non-*M50* paint has been leached by rain water to expose vertical brushmarks in the undercoat? Insoluble *M50* pigment prevents this film failure.

D. No excessive fading from light action

This time examine the close-up (bottom photo at right) of a 9-year *M50* pigment primer exposure test. Contrast between the area shaded by a wooden panel holder and the non-shaded area shows excellent tint retention conferred by *M50* pigment.



3-mil M50 pigment primer exposed 9 years, 45°S



M50 pigment paint tints stay brighter, retain hue longer ...they're protected against all 4 causes of color loss

No need to amplify what the illustrations on this and the preceding page show. Plainly, *M50** pigment Defense in Depth paints give you more color freedom, more color durability than ever before available in metal protection paints. More rust inhibition, more weather resistance, too. In every coat!

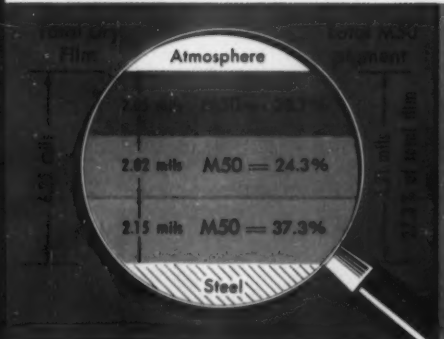
Where to get *M50* pigment Defense in Depth paints

National Lead makes the pigment, not the paints. So the place to go for *M50* pigment specification paints themselves is your regular supplier. However, National Lead can help you familiarize yourself with these new paints in four ways: (1) show you *M50* pigment paint exposure test panels at its Sayville, L. I. Test Station; (2) send you a 24-page descriptive brochure, "Defense in Depth." (Mail coupon below); (3) provide technical aid in test applications; (4) help you develop suitable specifications for paints containing *M50* pigment.

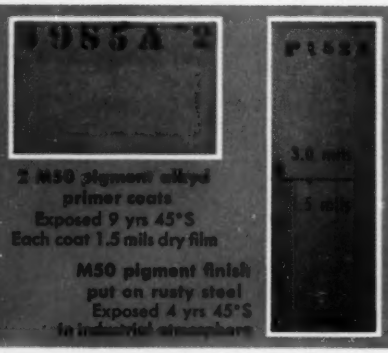
For M50 pigment paints themselves, contact your regular suppliers.

*National Lead Company trademark for a basic lead silico chromate pigment

Why M50 Defense in Depth paints give you metal protection beyond all former concepts



In every coat...rust inhibition! Fused lead chromate is noted for rust-inhibition. The *M50* pigment particle structure permits paint makers to include large proportions of lead chromate in all coats of anti-corrosive systems.


2 M50 pigment alkyd primer coats
Exposed 9 yrs 45°S
Each coat 1.5 mils dry film
M50 pigment finish put on rusty steel
Exposed 4 yrs 45°S

In every coat . . . weather resistance! *M50* pigment is insoluble in water and has the excellent tint retention properties of fused lead chromate. Unlike other rust inhibitors, it actually boosts weather resistance of paints.

In every coat...your choice of colors! *M50* pigment gets along well with most tinting pigments, permits paint makers a wide range of colors...not only in intermediates and finishes but in primer coats as well. Colors stay true.

M50 Defense in Depth

National Lead Company,
111 Broadway, New York 6, N. Y.

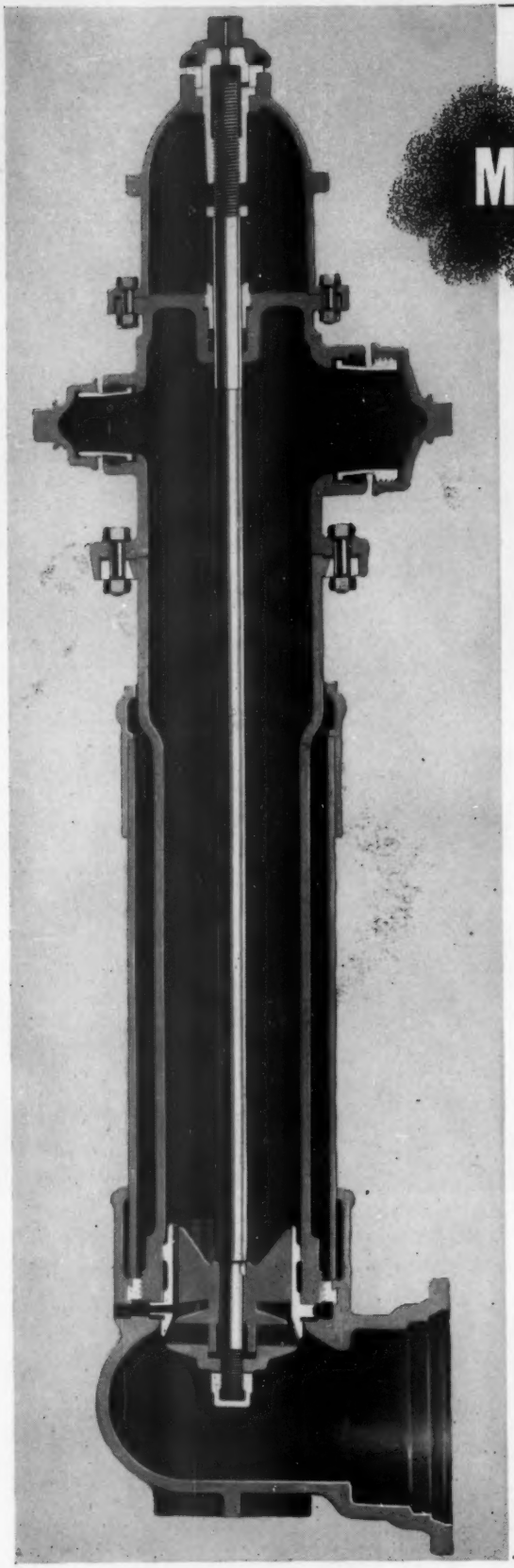
Gentlemen: Please send me your 24-page brochure, "Defense in Depth." Include color card of the six *M50* pigment paints you recommend for steel highway structures.

Name_____ Title_____

Firm or Dept._____

Address_____

City_____ State_____



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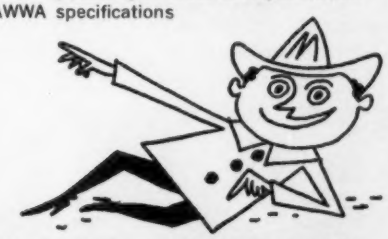
and many other quality features, too

- Replaceable barrel for maximum efficiency—quickly replaced in case of accident without excavating
- Head revolves 360°; simply loosen bolts and rotate
- Stuffing box plate cast integrally with nozzle section—eliminates extra part and provides positive, leakproof construction
- Operating thread, protected by stuffing box plate, operates free of rust, sediment and ice

Also . . . Nozzle sections supplied with hose or pumper outlets as specified • Operating thread cannot be bent • Compression-type main valve prevents broken Mathews from leaking • Nozzle level can be raised or lowered without excavating • Bell, mechanical-joint, or flange-type pipe connections • Conventional or "O" ring packings • Meet all requirements of AWWA specifications



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Public Ledger Building, Independence Square, Philadelphia 5, Pa.

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16 concrete specials make tough job easier

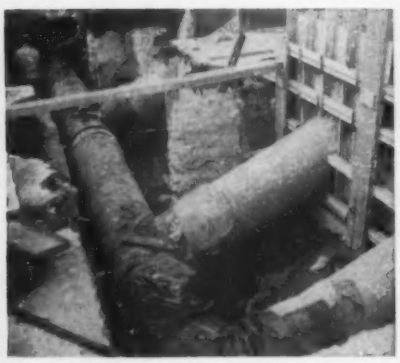
If you've ever added a new head house and new clarifiers to a water treatment plant, you know that the piping job isn't easy. It's tough to design and install.

But Malcolm Pirnie Engineers of New York designed 16 specials in five pipe sizes (from 20 to 42 inch) and Contractor Ivor J. Lee of Sharon put the job in without a hitch for the Shenango Valley Water Company, Sharon, Pa.

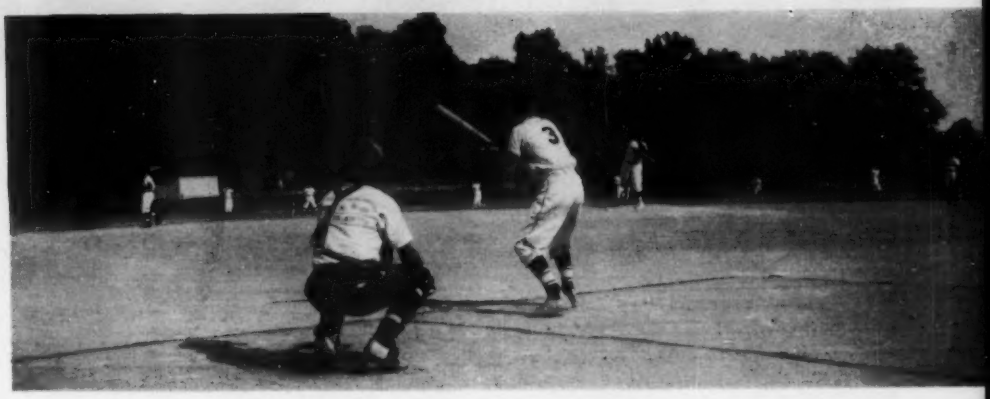
The prestressed concrete steel cylinder pipe like that used on this job can be designed for any project, easy or tough. If you want to know more about it, write our headquarters plants at Hattiesburg, Miss., or Dayton, Ohio.

Price Brothers

Workmen installing T's and short lengths to tie new piping into existing 36-inch settled water line.



Specials (left) and short lengths (center) simplify installation at Shenango Valley Water Company treatment plant, Sharon, Pa.



Activity above—The roof of the Sunrise Reservoir bears a Little League baseball field, a softball field, and tennis courts (background) . . .

Portsmouth's Top Job – Leak Plugging

When 703,000,000 gallons are lost to revenue a thumb in the dike won't do

By **H. C. GROWDON***

One problem that the Portsmouth, Ohio Water Department does not have is that of water treatment and supply. Surveys have shown that, barring unforeseen developments or phenomenal growth, its treatment facilities are a good ten years ahead of demand.

But distribution and storage pictures are painted with another brush—in fact, with an entirely different bucket of paint. The largest portion of the $2,500,000 that has been spent on water and sewage facilities during the past ten years went into rehabilitation of water distribution and storage. And the job is not yet finished.

In 1953, total pumpage at the plant was 1,707,000,000 gallons, but in the entirely metered system, 703,000,000 gallons could not be accounted for. Since economics of leakage problems normally dictate immediate action when unaccountable water volumes reach 20%, the more than 34% loss in the Portsmouth system amounted to a flood of vanished revenue dollars. The question that confronted city officials was "where to start?"

As there was no way to judge the amount of leakage in the distribution system until storage facilities were sound and tight, first priority went to investigation and rehabilitation of reservoirs and tanks.

At the time it was estimated that the 22,500,000-gallon Sunrise Reservoir, serving the northwestern portion of the city, was losing some 500,000 gallons per day (187,000,000 annually), mainly because of settlement at one corner and a resulting vertical crack in the southern wall. In addition, considerable leakage was known to occur around the peripheral footings and the footings of column pads.

On this rehabilitation job alone,

. . . More activity below as men groove column pad for flashing; Gardner-Denver wagon drill does the job.

The author points out grooved pad. Highway reinforcing mat is to be seen at the right. All peripheral walls are grooved in a similar way.

* Mr. Growdon is the Water Works Superintendent of Portsmouth, Ohio.

Specials (left) and short lengths (center) simplify installation at Shenango Valley Water Company treatment plant, Sharon, Pa.

CONVENTIONAL 18-FOOT CAST IRON PRESSURE PIPE

GRIFFIN-20 COUNCIL BLUFFS

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CAST IRON PRESSURE PIPE IN 20-FOOT LENGTHS!

"Give us longer pressure pipe lengths to help hold down rising labor costs involved in pipe installation!"

That was the overwhelming demand of water works operators, city engineers, consultants, and piping contractors in the Plains States, according to market surveys conducted by the Griffin Pipe Division of Griffin Wheel Company.

To answer this need, Griffin has developed the **Griffin-20** . . . a complete line of 20-foot cast iron pressure pipes in the popular 4- to 12-inch diameter size range. Compared to conventional 16-foot and 18-foot lengths, this modern 20-foot length means *over 10 percent fewer joints* . . . and *that* means that less time is required to install **Griffin-20** cast iron pressure pipe!

Griffin is the first American foundry to manufacture cast iron pressure pipe in 20-foot lengths, cast by the Delavaud process in this popular size range. A complete selection of pipe joints is offered, including the patented Bell-Tite *slip-on*, *mechanical joint*, and *bell and plain end*. All pipe will be either cement-lined to full specification thickness, or half thickness, as required.

Not only will the new *length* save money for cast iron pressure pipe users throughout the Midwest . . . the strategic location of the Griffin Pipe plant at Council Bluffs will also effect substantial savings in *shipment* time and money!

Take advantage of all these economies. The *next* time you have a cast iron pipe installation . . . *contact Griffin!*

*"Griffin-20" is a trademark of Griffin Wheel Company

Griffin is constructing a new million-dollar pipe research center in Bensenville, Illinois. Griffin, founded in 1879, has 11 plants, and has poured more than 15 million tons of iron.

GRIFFIN PIPE

DIVISION
GRIFFIN WHEEL COMPANY
COUNCIL BLUFFS, IOWA

GRIFFIN PIPE DIVISION COUNCIL BLUFFS

Buttresses and panels on the exterior of the Sunrise Reservoir have spalled and cracked until they now require $43,500 worth of refacing.

Panels behind and to the right of the wagon drill have been pressure coated. Deteriorated buttresses will be coated next.

the city has spent $146,000, and there is still the operation of exterior face-lifting by Gunite-applied cement plaster to be completed. This application alone is costing the city $43,500.

The rehabilitation of Sunrise began with cribbing the settling corner of the big reservoir and pressure-sealing all wall cracks from the inside. Peripheral walls were grooved horizontally just above the existing floor line and similar grooves were cut in all column pads at the same elevation.

Flashing of 20-ounce copper in 14-inch bands was then installed in all grooves, running down the wall and returning along the floor of the reservoir. A single major underdrain trench was cut in the floor to carry off ground-water accumulation, then 6-inch highway reinforcing mat was placed on blocks, elevating it two inches above the old, rapidly-disintegrating floor. A new, pressure-applied, 6-inch concrete floor was then placed on the subbase (old floor) to complete the interior renovation. Plaster surfacing on the facade, buttresses and panels of the horseshoe-shaped storage facility has deteriorated through spalling and cracking, so that major repair by a Gunite crew is necessary. This portion of the reservoir project is nearing completion.

Lots of Future Work

During the time that the Sunrise Reservoir was being rehabilitated, other portions of the system were receiving their share of attention. Almost $100,000 worth of high-service mains are being installed. A main-connection and pumping facility is being added to the Basham Hill Reservoir to serve portions of the eastern part of the city. Mains are now being extended to outlying areas and loop connectors are being laid to improve the quality of service, pressure and availability at extremities of the system. Many large-diameter valves are being replaced as the work progresses.

The second major reservoir rehabilitation program is being carried on at the Basham Hill facility. Complete repair and refurbishing of the reservoir and new features necessary to float the reservoir on the East Portsmouth and Wheelersburg zones of the system will cost approximately $250,000.

Expenditures, including the Basham Hill contracts, will total approximately $333,200 during the next three years. The program represents a large chunk of the Portsmouth budget but 1962 will see not only a first rate treatment and pumping system but a sound storage and distribution system, too.

Portsmouth finds itself having to formulate policies that will lead to the supply of water to areas outside the city limits. The present program aids in strengthening the system so that it can accept this responsibility, if economics, feasibility, and other factors dictate.

Water is at a premium in much of Scioto County and our engineers point out that the most logical source of water in much of the area is the city's system.

Generally speaking, our engineers have found the waterworks facilities adequate for the city's needs. If we also supply the county areas, enlargements probably will be needed within the next eight to ten years. Portsmouth already supplies water to New Boston, an independent community which our city completely surrounds.

Consulting engineers on the overall project are Alfred Le Fevre, Cincinnati; supervisory engineer is Lee McCabe, Portsmouth; rehabilitation contractor is George Dietzel of Cincinnati.

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- **STRONGER, SAFER SINGLE UNIT CONSTRUCTION**—Pioneered by American Motors, Single Unit Construction means lasting freedom from body-bolt squeaks and rattles . . . cuts maintenance costs to the bone. Deep-Dip Rustproofing means lasting protection against rust and corrosion.

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Buying Police and Fire Uniforms

There is a simple and sure way to acquire good uniforms for police, firemen and any other uniformed municipal forces.

As uniforms are made by a uniform manufacturer out of material which he does not himself make but must buy, the city's first step should be to determine a fabric specification by mill and number. As mill casualties have been severe in recent years, the cities would do well to compile a fresh set of names of mills and suppliers of uniform fabrics.

Next time the city buys uniforms, it should take mill bids on the fabrics. The most satisfactory bid, as a mill and style number, would be named in the specifications for the uniforms. A list of uniform manufacturers operating nationally should be compiled as well as a list of bidders who specialize in police and fire uniforms.

That is the way to buy good uniforms. But how many cities follow that procedure? Not many, judging by reports to THE AMERICAN CITY by purchasing agents of 35 large cities.

The central purchasing department does prepare fabric specifications in ten of these cities, named in the table. Fourteen cities specify fabric by mill and style number. K. P. Graham, Purchasing Agent of Berkeley, Calif., explains: "To select the present uniform fabric, a committee from the Police Department surveyed 12 nearby departments on their experience. These facts were gathered and an election held in the Police Department to select two fabrics and two styles of uniforms. These choices were worn by two officers for each fabric for six months and the results, showing wear, cleaning experience, appearance, etc., reported on and a final uniform selected by a second vote of the Police Department."

In eight cities the police or the fire department or both write the fabrics specifications and purchase the material. In a number of instances the city purchasing agents named the woolen mills whose fabrics they specify; they are:

A. D. Ellis Mills, Inc.; Sales: 40 East 34th St., New York, N. Y.

Empire Worsted Mills, Inc., 31 Water St., Jamestown, N. Y.

Franklin Worsted Co., Franklin Woolen Mills, Inc.; Sales: G & Venargo, Philadelphia, Pa.

Metcalf Bros., 40 East 34th St., New York, N. Y.

Raeford Worsted Corp., Division of Burlington Industries, Inc., 261 Fifth Ave., New York, N. Y.

J. P. Stevens & Co., 1460 Broadway, New York, N. Y.

Stillwater Worsted Mills, Inc., 40 West 34th St., New York, N. Y.

Warrenton Woolen Co., 839 Main St., Torrington, Conn.

The cities buy their uniforms at various times throughout the year. Four of the thirty-five cities, Charlotte, Cleveland, Duluth and Louisville, buy their winter uniforms in late summer or early fall, and their summer uniforms in the spring. Two cities order somewhat earlier: Hartford orders its winter fire uniforms in April or May for September delivery and its summer uniforms in October or November for May delivery; Detroit orders its winter fire uniforms in the spring, its summer fire uniforms in the fall, its winter police uniforms after spring inspection, and its summer police uniforms after November inspection. Atlanta, Birmingham, Boston, Cincinnati, Omaha, Philadelphia, and Tacoma order at the same time for winter and summer, Houston and Pasadena order once a year and use the same weight uniforms the year round. Baltimore, Portland, Ore., and Springfield, Mass., order once a year for a yearly supply contract. El Paso and Milwaukee order as needed.

There remain 13 cities where the men buy their own uniforms.

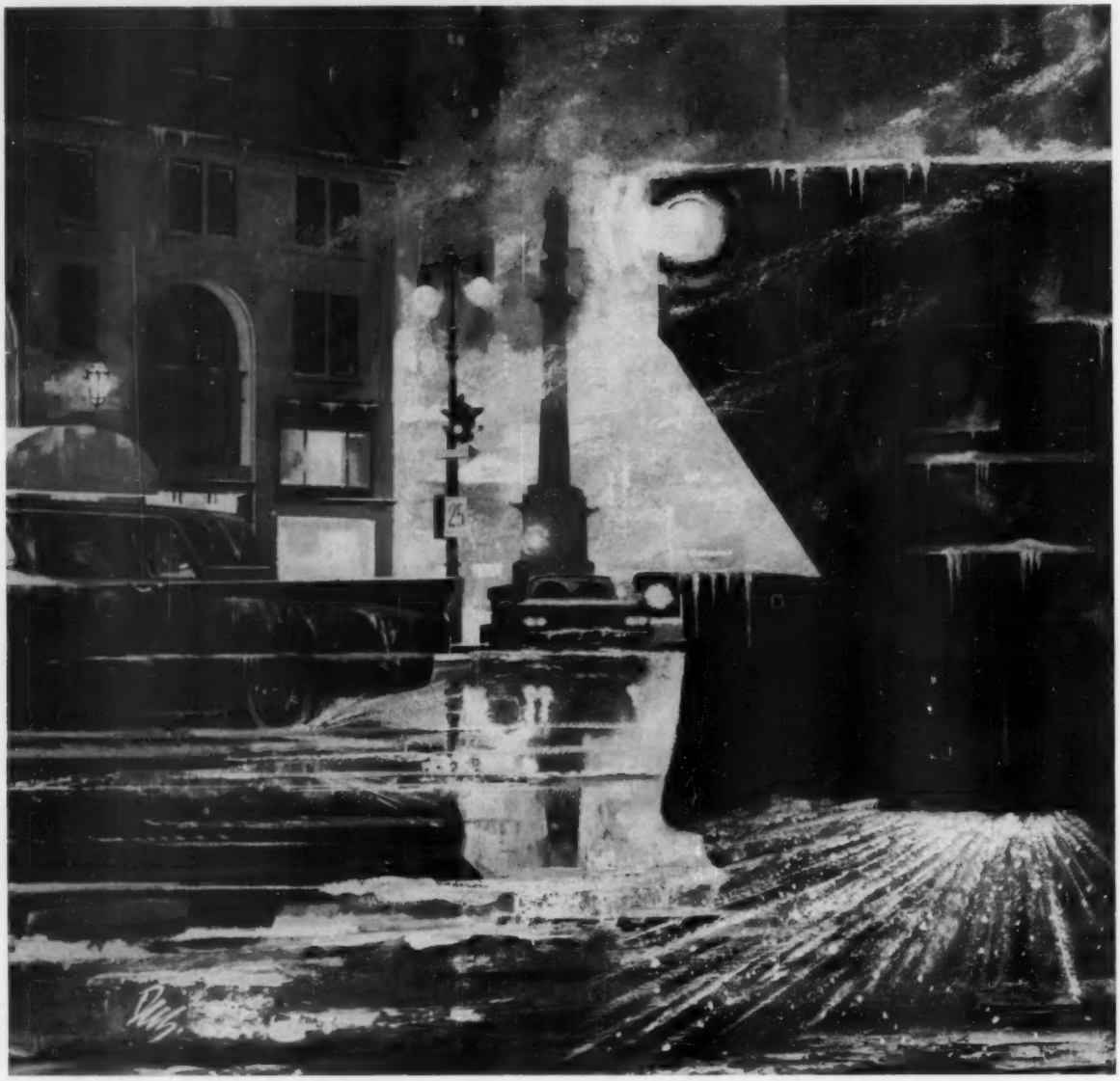
The several suggestions in this article are made for the protection of the police and fire departments. Often a considerable sum is involved and the city officials and purchasing authorities should know what they are buying. The reason for naming the mill in the uniform specifications is to put the responsibility on the mill who will manufacture the cloth. This practice, in cities where the men buy their uniforms, will protect the officers against substitution.

How Cities Buy Uniforms

1. **Central Purchasing Department prepares fabric specifications:**
   Atlanta (Fire Department only); Birmingham; Boston (Fire); Charlotte; Cincinnati; Detroit; Houston; Louisville, Ky.; Milwaukee; Philadelphia.
2. **Police and Fire Departments prepare fabric specifications:**
   Baltimore; Cleveland; Dayton, Ohio; Hartford, Conn.; New York; Portland, Ore. (Police); Springfield, Mass.; Tacoma (Police).
3. **Specifications are based on tests:**
   Baltimore; Cleveland; Detroit; Milwaukee; Philadelphia; Portland, Ore.
4. **Fabrics are specified by mill and style number:**
   Atlanta; Baltimore; Cincinnati; Cleveland; Dayton; Duluth; Hartford; Houston; Kansas City, Mo.; Louisville; Milwaukee; Philadelphia; Portland, Ore.; Springfield, Mass.
5. **Ask bids or samples directly from mills before asking bids:**
   Boston (bids); Philadelphia (samples).
6. **Men buy their own uniforms:**
   Allentown, Pa.; Atlanta (Police); Boston (Police); Des Moines; Los Angeles; Minneapolis; Omaha; Peoria; Portland, Ore. (Fire); Sacramento; Salt Lake City; San Antonio; San Diego (Police).
7. **City buys ready-made uniforms:**
   El Paso; Pasadena.

The lower the temperature...

the wiser you are to use straight Sterling Rock Salt for ice control



Fact: Straight Sterling Rock Salt has effective melting power at temperatures ranging from 32° F. to below zero! All that's necessary is to increase the amount of rock salt used as the temperature drops—just as you use more fuel to heat your home when it gets colder outside. For example, today many road men use about one-third more Sterling Rock Salt (straight) when the temperature falls below 20° F. This provides the bare, safe pavements which are so essential during winter storms!

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STERLING "AUGER-ACTION" ROCK SALT

INTERNATIONAL SALT COMPANY, INC.

Author Verden has been in charge of the Sanitation Division for nine years.

Two trucks discharge their load on the trench floor as the dozer compacts and covers material dumped earlier in the day.

One Bulldozer in a Trench

With plenty of land available, Victoria, Tex. selects the sanitary landfill to solve its refuse sanitation problems economically

By JIMMIE VERDEN*

Refuse is covered with about 8 inches of clay at the end of each working day.

One bulldozer in a trench is economically solving refuse disposal problems for this south Texas city of 55,000 residents. At the same time, it has eliminated previous complaints about rats, smoke and odors which the old open dump had provoked.

Victoria turned to sanitary landfill for refuse disposal in October 1957, shortly after Ivan P. Oliver took office as city manager. After studying local conditions, he decided the deep trench with daily cover would best serve our purpose and be the most sanitary.

Five city-owned 15-yard Pak-Mor garbage trucks and four trash trucks, plus private haulers serving industrial and commercial establishments, bring roughly 5,000 loads per month to the 1,000-acre landfill site. We pick up garbage from residences twice a week and trash once a week. Each city truck brings 4 to 5 loads a day, six days a week.

Equipment at the disposal site consists of a single Caterpillar D-6 tractor with bulldozer blade. This unit starts by digging a trench about 35 feet wide, 40 feet long and 15 to 16 feet deep, beginning across the field from the entrance. The end toward the field entrance is sloped to provide access to the floor of the trench. Cover material is dozed from this end, advancing down the trench.

In dry weather, trucks back down the slope and dump directly on the trench floor. In wet weather they dump over the edge. As the material is dumped, the D-6 spreads and compacts it against the far end of the trench. We bale cardboard, paper and rags on the site and sell them, bringing in about $1,000 a month. Metal is also collected, smashed by the tractor and then sold to salvage yards.

After the refuse has been sorted and compacted, the D-6 dozes cover material up to 100 feet from the sloped end of the trench, advancing it across the field. Each evening the day's compacted refuse is covered with about 8 inches of clay. To further protect the area against flies, we spray the trench with insecticide in summer.

A 30-man sanitation department, under the writer's supervision, handles refuse collection and disposal. This includes the tractor operator and an attendant at the disposal site. The landfill is open 11 hours a day, seven days per week, with an attendant on duty at all times to supervise dumping.

When our present area for trenches has been used up, we will move the disposal operation to an abandoned gravel pit on the site.

* Mr. Verden is the Sanitation Superintendent of Victoria, Tex.

The Council-Manager Councilman

Study shows the composite councilman in California who favors the council-manager form of government

By VICTOR E. BARTON*

What is the combination of personal traits, educational and vocational backgrounds and vital statistics that leads a man to a council chair in the council-manager form of government, and ultimately into favoring the council-manager concepts? A recent study of 196 councilmen in 92 California cities, offers a general indication of what pro-council-manager councilmen have in common. Populations ranged from 7,000 to 500,000 with most polled cities in the 20,000-to-30,000 class.

The councilmen who most favored the council-manager form would have the following attributes applicable to both male and female local legislators (for six women were queried):

AGE—Upon first assuming office, the typical councilman will be under 45 years. The so-called "younger councilmen" appear more familiar with the council-manager plan and endorse what they consider to be its benefits. Councilmen beyond 60 years upon first being elected are not as "at home" with the plan, usually having "grown up" under other forms of local government.

BACKGROUND — Those legislators who were born and raised in a council-manager city favor it most enthusiastically. Coincident with birth and up-bringing in a council-manager community, the typical councilman has resided at least 20 years in the city he serves. The relationship betwen long residence and acceptance seems to indicate that enough time must elapse for citizens to recognize the benefits of a council-manager plan and to accept it as part of their daily lives.

EDUCATION—The great majority of the responses indicated that the typical councilman is college trained. Degrees were predominantly in political science, public administration, law or engineering, indicating that the legislator traditionally follows a professional approach to the complex job of city administration.

It was found that, after election, the most enthusiastic adherents to the city-manager plan have undergone supplemental education in public administration or law. This was interpreted as an indication that the typical official maintains a high interest in general administration of the municipality, rather than in any one department or function.

Vocationally, the typical approv-

* Mr. Barton is City Administrator, Madera, Calif. He is the author of another study of the council-manager plan entitled, "The Manager Plan Is Good But . . ." which appeared in THE AMERICAN CITY in April, 1959, p. 115.

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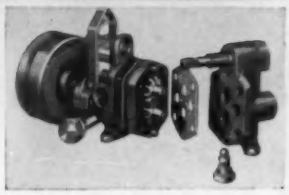

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ing councilman is most likely a merchant or holds a management post in industry. However, in this category of questioning, the wide variety of responses is demonstrated by the following:

Occupation	Number	Percent
Merchants	37	18.88
Managers	25	12.76
Miscellaneous business employees	23	11.74
Retired citizens	20	10.21
Agricultural workers	15	7.65
Building contractors	15	7.65
Lawyers	10	5.10
Medical field practitioners	10	5.10
Insurance agents and brokers	9	4.59
Engineers	9	4.59
Teachers and professors	9	4.59
Real estate agents and brokers	8	4.08
Housewives	5	2.55
Manufacturers	1	.51
Totals	196	100.00

Also in the backgrounds of these men and women was a common history of service in civic organizations of their communities. Participation in chambers of commerce and service clubs was one phase of the survey almost universally shared by all respondents who favored this form of local government. Many of the most enthusiastic supporters had held office in one or more of these civic groups.

LIMITED POLITICAL ASPIRATIONS—A large majority of all councilmen favoring the manager plan had no interest whatsoever in higher public office. This was considered an important point by correlators, because it indicated a persistent appreciation of the job to be done at the municipal level without one eye cocked at a seat in the legislature during a time when local problems are the main concern.

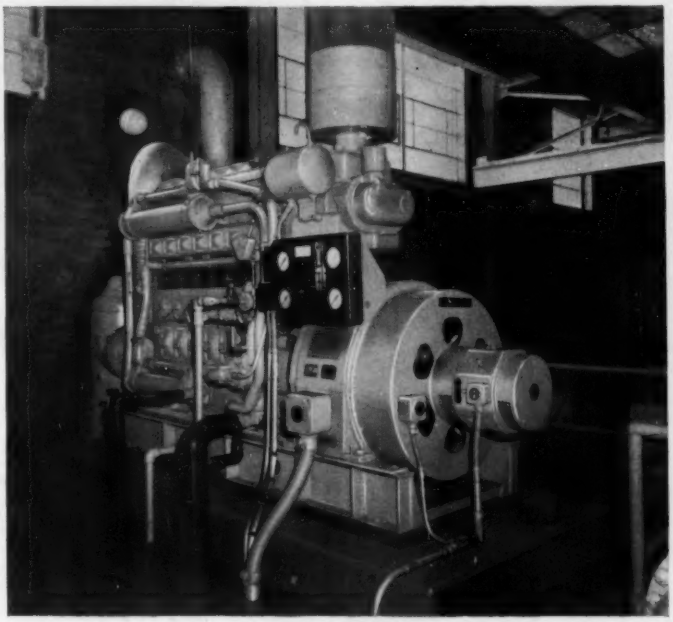
Possibly the most gratifying aspect of the latter criterion is the interpretation that most of the favorable respondent councilmen shared a simple desire to serve the community and to strive for efficient services at a reasonable cost.

This Councilman Fits The Specifications

It must be definitely stated that this pilot survey is merely an opening declaration, which may or may not prove valid after more frequent and general background studies have been completed. But, here is

Picture of O-P economy!

Ohio pumping station saves $300 a month using **F-M** Opposed-Piston standby diesel for both power generation and pumping



Compact, lightweight Model 38F5¼ O-P is rated 450 hp. at 1200 rpm., direct drives a 175-kw. F-M alternator and, through right-angle gears, an F-M Pomona Vertical Turbine Pump with 5.5 mgd. capacity at discharge pressure of 105 psi.

Electric power off the flywheel end, high-service pumping off the front—that's the standby job cut out for this Model 38F5¼ Fairbanks-Morse O-P Diesel in the Elyria, Ohio water works serving 60,000 people.

Called into service for 3 to 6 hours a day in the Spring of 1958, the O-P pumped water for $1.50 less per million gallons than purchased power—a $300 per month reduction, including savings on demand charges. Each Saturday the engine makes a test run as the sole high-service on the line.

Versatile as well as economical, the Model 38F5¼ O-P is also ideal for direct-driving other equipment off the rear, with front end of shaft driving an auxiliary generator, crusher, pump, etc. The O-P can be furnished for either diesel, dual-fuel, or spark-ignited operation, and is available as a complete packaged unit with all accessories attached to the frame. Write Fairbanks, Morse & Co., 600 S. Michigan Ave., Chicago 5, Ill.

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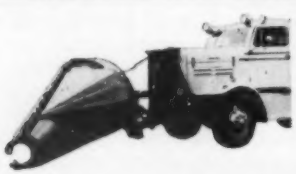

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FRINK SNO-PLOWS, INC., CLAYTON, N. Y.
Eastern Steel Products, Ltd., Preston, Ontario-Canada

the man who most nearly fits the self-portrait drawn by the 196 councilmen who favored council-manager government for their own cities.

- **He was 43 years old when first elected to serve in that city.**
- **He was born in the city he serves.**
- **At survey time he had completed six years of service on the council.**
- **He is college trained in business administration.**
- **He holds a managerial post with a local corporation.**
- **He has been an active participant in chamber-of-commerce activities.**
- **He professes no political aspirations toward higher levels of government service.**

● He is—J. H. Backstrand, Councilman, Riverside, Calif.

Over 70 Million Vehicles in U. S.

Motor vehicle registrations are expected to reach 70,416,000 for 1959, or 3.1 per cent more than in 1958, according to Federal Highway Administrator B. D. Tallamy. Passenger cars are expected to total 58,591,000 for 1959, a 3% increase; trucks and buses are expected to number 11,825,000, a gain amounting to 3.5%.

California is expected to lead in 1959 registrations while Arizona should show the greatest increase.

Annual increases in total registrations, which reached a 7.2% peak in 1955, showed lower increases in the following years. They amounted to 4% in 1956, 3% in 1957 and 1.7% in 1958.

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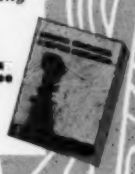

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sliding or screw type cast iron valve boxes for covering 4" thru 10" valves for water or gas. Rugged construction for lifetime service. 5¼" shaft. Extensions as required.

Adjustable
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THREE PIECE

valve boxes supplied with separate bases are available in sliding or screw type. Made with 5¼" and 7" shafts with extensions as required. Complete line of service and roadway boxes.

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Designed especially for small municipalities. Compact and easy to handle . . . with big plant features such as rotary dryer, pugmill, built-in asphalt tank, volumetric metering system. A self-contained unit on two-wheel trailer. The Wylie Patch-Mix produces all types hot mixes as well as cold mix. Features never before available at such low cost.

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in Cleveland, Ohio, NEW TRANSIT STATIONS HELP

Feeder bus lines, new station parking lots and frequent schedules are three reasons why rapid transit is keeping 5926 automobiles from choking the streets and parking lots of downtown Cleveland. Surveys show that 70% of the present riders who leave their cars in station lots are new users of rapid transit.

So successful is the coordination among bus line, parking lot and rapid transit, that the Cleveland Transit System recently added two new stations —West Park and Triskett. Already this 1.9-mile extension is largely responsible for the 21.4% increase in the System's rapid transit rider volume over a 3-year period. Here is positive proof that rapid transit works.

During inbound morning rush hours, 17 trains running on frequent schedules handle approximately 15,000 riders. Expansion plans now under way to add over 1600 parking spaces at West Park and Triskett Stations will increase this total considerably.

In addition to easing traffic and parking tie-ups downtown, rapid transit saves significant travel time and expense. For example, from the area of the new West Park Station, automobile trip time has been clocked under *ideal* conditions of weather and traffic at 22 minutes in the rush hour. The same trip on rapid transit, regardless of weather or traffic jams, is 15 minutes—a saving of 30% in time alone. Add to this the personal fatigue of driving, the cost of automobile maintenance and parking, and you have the reasons why so many more Clevelanders are riding on rapid transit!

If your city is plagued by traffic snarls, inadequate parking and loss of business and revenue, it's time to review your public transportation facilities. Chances are, you'll find rapid transit is the answer to bringing people and business back to your urban centers. J-15014

YOU CAN BE SURE...IF IT'S Westinghouse

WATCH "WESTINGHOUSE LUCILLE BALL-DESI ARNAZ SHOWS" CBS TV FRIDAYS

KEEP 5926 AUTOS OFF THE STREETS!

Windermere Terminal. Four bus loops provide easy transfer to and from rapid transit. Four parking lots contain a total of 947 automobile spaces.

West 117th-Madison Bus Terminal adjacent to station provides quick, convenient transfer to and from rapid transit trains. Facilities such as these cut commuting time by 30% and more . . . help keep autos from strangling downtown traffic.

West Park Station. Fifteen hundred parking spaces will be increased to 2500 spaces in the near future. Note special drive-through area for pickup and dropoff of passengers driven by auto to station. Connecting bus lines provide continuous transportation to all parts of the city from all stations.

US RUBBER GIANT ACID HOSE

Keeping water soft during a tough plant-expansion job

The chemical treatment building of the Kansas City Water Works is getting a new addition. This big job will take two years, during which time the building contractor is using a simple and economical means for conveying water-softening chemicals to the water supply.

He uses chemically-resistant U.S. Giant® Acid Hose, furnished with stainless-steel fittings.

The men find it extremely flexible and easy to handle, resistant to abrasion, impact and weather. It remains unharmed by its highly corrosive cargo—hot lime slurry, ferric sulphate, alum solution, soda ash.

U.S. Giant Acid Hose is made for either suction or discharge service, replacing metal pipe because it handles highly corrosive solutions so well.

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Properly designed and operated lagoons rarely produce offensive odors; since they resemble small lakes, they should be fenced and posted for what they actually are.

Can You Use a Sewage Lagoon?

A concise, non-technical review of a sewage purification method useful to the small community with a limited budget

By **L. E. WEBBER***

The past few years have seen rapid increases in the use of sewage lagoons. Basically, a lagoon is merely an artificial pond to handle either raw sewage or effluent from another treatment facility.

Reports indicate that the City of San Antonio utilized the principle of the stabilization pond as far back as 1901 but Maddock, N. D. appears to have used the first deliberately designed pond in 1949. By 1957 there were over 250 installations in the Southwest, with 136 of these in the Missouri Basin. Of these, 70 were located in the Dakotas. Derry, N. H., with a climate similar to that of North Dakota, has adopted the lagoon system.

Sewage lagoons require sunshine, wind and cheap land. The latter is most often found near the smaller community. Some types of soil may require treatment to make the sides and bottoms of the lagoon less pervious. The function and constitution of adjacent areas often determines how much ground loss is acceptable.

On an average, one acre of pond will serve 100 people. Liquid depth varies from 2½ to 5 feet. Wave action has little effect at depths below 5 feet, while sunlight seldom penetrates beyond 2 feet with algae present. Control of emergent vegetation usually solves the problem of mosquito breeding. This establishes the minimum depth.

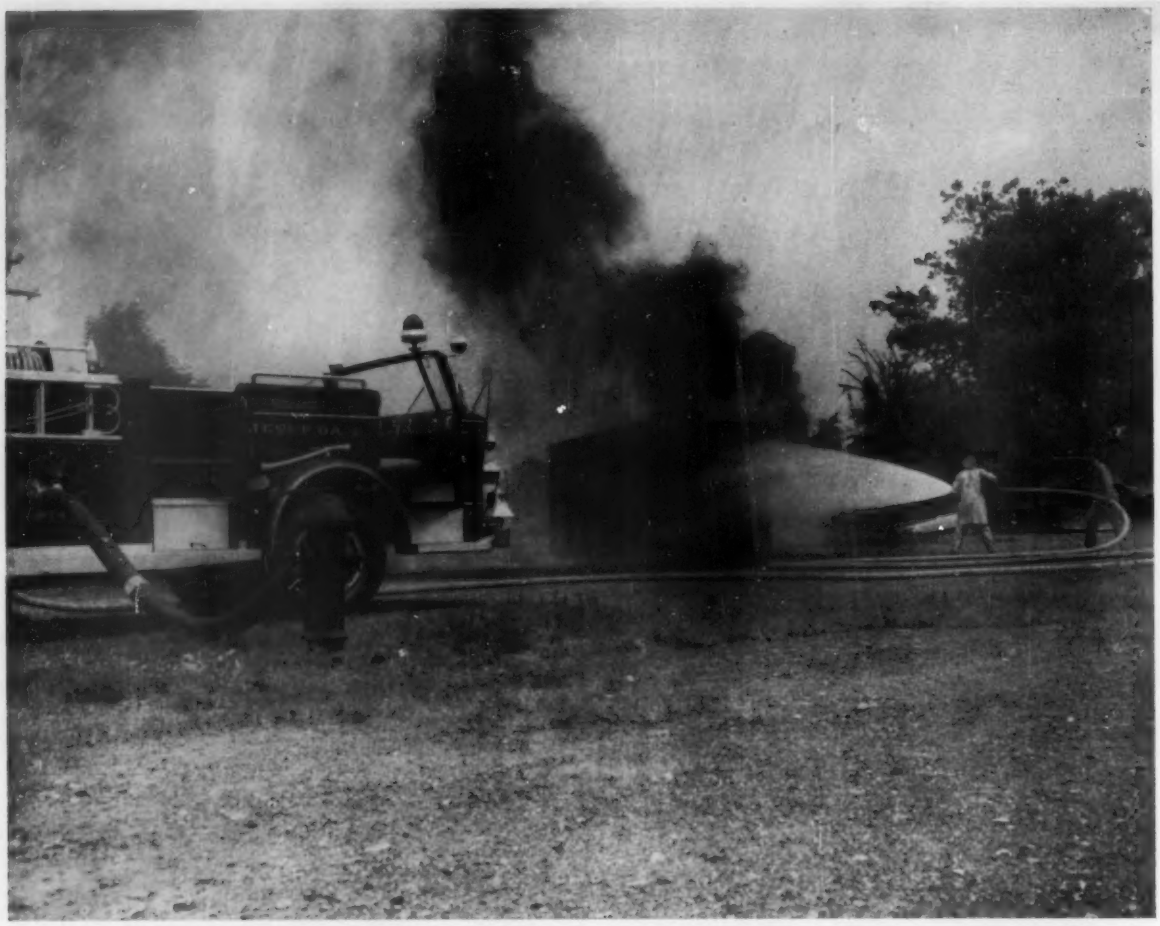
Ponds should be regular in shape to promote a clean sweep of wind over the surface. Air movement breaks up surface films and ripples, waves and whitecaps increase aeration. Sunshine and warmth promote algae growth which through photosynthesis produces oxygen for the biological decomposition.

Loading on the system is expressed in pounds of B. O. D. (biochemical oxygen demand). Although loadings in excess of 27 pounds of B.O.D. per acre per day have been reported, the best practice is to limit loadings to 20 pounds per acre per day. In purchasing a site, consider future needs. If a pond is designed to discharge effluent, local conditions will dictate whether or not a second lagoon, in series with the first, will be required.

Lagoon banks should be of impervious material seeded down to liquid level. Provide an 8-foot minimum bank width for stability and access for maintenance trucks. Sur-

* Mr. Webber is research associate director of civil engineering and associate director of the engineering experiment station, University of New Hampshire, Durham, N. H.

Cheap land is one requisite of the lagoon system for considerable land is required as can be seen from this view of the Derry, New Hampshire, installation.



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Located at the Elmira, New York, Experimental Station of American LaFrance, America's oldest and largest manufacturer of quality Fire Engines, this KENNEDY Fig. 1080 Fire Hydrant has performed perfectly throughout thousands of punishing Fire Engine tests. Records show only minor maintenance requirements during the past ten years.

This outstanding performance record proves that KENNEDY Hydrants are the best investment in service and fire protection for your community.

Now with a new, improved line of fire hydrants, the K-10 Standard and K-11 Safetop Model, KENNEDY offers even better construction features to assure longer life and high performance.

Find out how your community can improve fire protection service and increase the life of hydrants with easier and more economical cost and maintenance features than ever before.

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round the area with a stock-tight fence and clearly posted.

Sewage lagoons compare favorably with other methods of primary treatment. They serve as holding basins where oxygen can be provided for bio-chemical action. While some decomposition does take place without oxygen (anaerobic), aerobic bacteria (active in the presence of oxygen) do most of the work. This action kills most of the harmful bacteria in sewage. Sewage lagoons have been found to reduce the coliform bacteria count (an indication of contamination) by as much as 99.9%, with averages approximately 95% at all times.

During the warmer months, more oxygen is available for decomposition. As temperatures drop and the ponds become ice covered, much biological action ceases. Liquid depth then builds up and the ponds serve primarily as storage and settling basins until spring.

A properly designed lagoon rarely produces offensive odors perceptible beyond the lagoon dikes. However, certain precautions should be taken. Locate lagoon sites at least half a mile from the center of inhabited areas and a quarter of a mile from the nearest dwelling. Prevailing winds ought to cross the pond so as to carry odors away from inhabited areas. Place inflow pipes about one foot from the bottom near the center of the pond. Thus, raw sewage is generally mixed quickly to expedite the start of biological action.

The most likely time for odor production is during the spring ice break-up, for over the winter the ponds usually accumulate considerable quantities of sewage that has had relatively little biological action. This period is over as soon as oxygen mixes with the water.

Areas of as few as 100 people and as many as 11,000 people utilize the lagoon system. Reported costs of Dakota ponds range from $4.40 to $37.94 per capita, far below that for treatment plants. But first costs are not the only savings. Maintenance and operating costs are also low.

Sludge build-up offers no problem. One author indicates that 100 years is required to build up one foot of sludge in a 10-acre pond serving 1,000 people—exclusive of industrial wastes. Percolation and evaporation can often be balanced with incoming sewage so that there will be no effluent. With proper detention time, the effluent can be discharged into rivers.

Cities Act on Salary and Business Taxes

The use of non-property taxes to finance local government seems to be increasing according to reports from the Muncipal Finance Officers Assn., Chicago, Ill.

St. Louis, Mo. has boosted its city income tax from ½% to 1%; this applies to wages and salaries and to net profits of businesses. The tax increase will yield an estimated additional $4½ million and was approved at a local referendum.

Frankfort, Ky. has established a 1% city "occupational and business" tax which will yield about $250,000 additional revenue to this city of 12,000. The tax will be withheld by employers from gross salaries of wage earners, much of it from 4,000 state employees working in the city but living elsewhere.

Ogden, Utah has adopted a ½% sales-use tax to be collected by the state and remitted to the city.

Revolutionary TRUCK-LODER Frees One Man For Other Sewer-Cleaning Jobs!

To get the full Truck-Loder story, write for the name of your nearest "Flexible" Distributor.

The Truck-Loder Bucket Machine brings the deposits direct from the sewer to truck *non-stop!*

It ends the hard dirty work of manually pulling on the bucket to dump the load; shoveling the deposit from street to truck; and cleaning up the street afterward. It's faster – easier – more sanitary. In other words, it puts an extra man in your Sewer Department at *no extra cost.*

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A sea-water distillation plant, using extraction steam from a turbine generating station, able to deliver 1,000,000 gallons of potable water daily, probably will look like this.

One Dollar Per 1,000 Gallons

. . . for fresh water from the sea, but don't expect large volume and be sure that you recognize the limitations

By **FRED A. LOEBEL,** President
Cleaver-Brooks Special Products, Inc., Waukesha, Wis.

If you want to convert sea water to fresh, your best dollar value today is a combination of multi-effect or multi-stage flash plants and electric power plants. However, don't expect to produce big volumes.

On an average, you can extract about 7½ gallons of water per kilowatt hour by using extraction steam from the power-plant turbine to heat the evaporator. Under current conditions the cost would be approximately $1 per 1,000 gallons.

Fred A. Loebel

Assuming that the power plant delivers eight kilowatt hours per person per day (a reasonable figure for an industrial area), you could produce no more than 60 gallons of potable water per person per day.

With some attention to conservation, this 60-gallon figure is adequate, at least for domestic use. It would, of course, not permit such uses as lawn sprinkling. The monthly water bill at $1.20 per 1,000 gallons, including distribution, would be $2.15 per person, not an unreasonable amount. However, such a price is too high for agricultural use.

Water as a By-Product

One must not fail to note that these costs can be realized only by considering the water as a by-product of electric power.

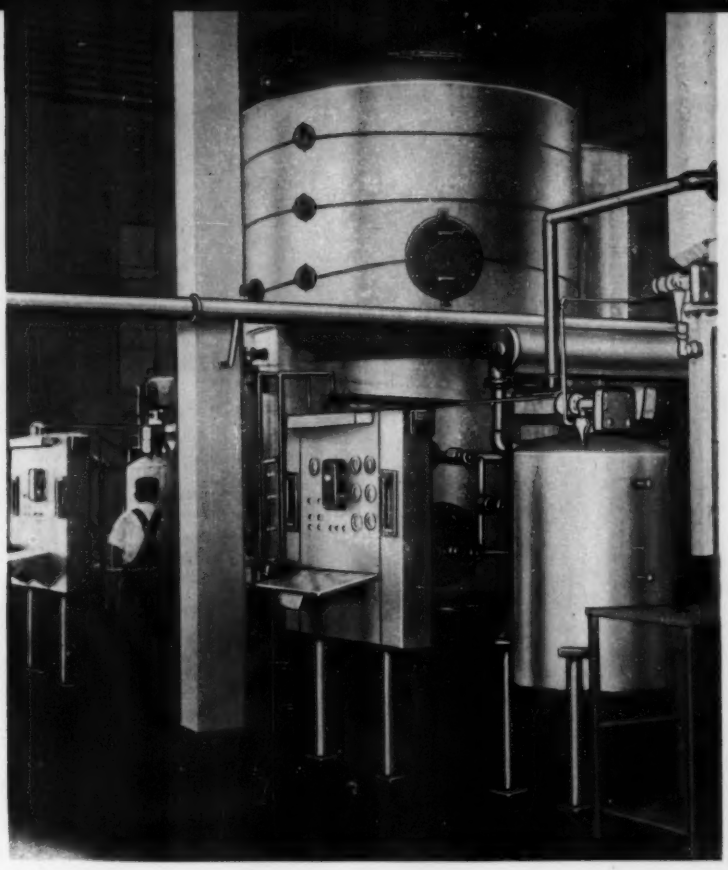
When water distillation for public use is added to the duties of a power plant, the turbine takes more steam, and the boilers must be larger. Therefore, one should charge the water plant for all additional costs which the power plant incurs as compared to operating alone with conventional generating and condensing equipment.

The accompanying table lists the cost figures for a plant able to deliver 1,000,000 gallons per day, combined with about a 5500-kw electric load.

Costs included are complete. Investment includes transportation, insurance, erection, water storage, interest on capital during construction, engineering, contingencies, and site. Annual costs include a 20-year (4%) amortization, 4% interest on investment and working capital, all maintenance, labor, supplies, fuel, power, taxes and insurance.

Column A represents a multi-stage flash-type distilling plant heated by steam at atmospheric pressure from a 6000-kw extraction-condensing turbine. Steam enters the turbine at a pressure of 600 pounds per square inch and at 825° F. Fuel costs 8½c per gallon. The plant is built of steel with non-ferrous tubes and tube sheets.

Column A shows that if amortization is completely eliminated, we still have a cost of about 70 cents per thousand gallons. Even much larger plants do not seem to reduce this cost figure greatly. For example, if only the basic material is included, thus eliminating all costs for transportation, labor, overhead, and profit, the cost of water, using the means described above, would still only be reduced by



These two 50,000-gallon-a-day distilling units are located at Salinas, Ecuador. More recently another unit—this one utilizing the flash evaporation principle has been installed here by Cleaver-Brooks.

about 15 cents per thousand gallons.

The costs apply to a multi-stage plant, which is fairly efficient, using no more than 5½ to 6 pounds of water per pound of steam. The plant could be made more efficient, but our costs studies show that for the conditions upon which the costs are based, the carrying charges for more investment would outweigh the fuel saving.

Column B is for a similar combined plant but includes foreseeable improvements in design which are currently being developed.

One of the most significant developments has been the contract recently awarded by Southern California Edison Company, Los Angeles, to our company to provide evaporation equipment for a pilot plant to convert sea water to fresh water. The demonstration unit, to be operated in conjunction with existing steam-generating facilities, will be the first of its kind in the country.

The contract, in excess of $100,000, calls for the construction of a sea-water distillation plant with a capacity of about 100,000 gallons a day. It will be erected at Southern California Edison's Mandalay Steam Station about three miles west of Oxnard in Ventura County, Calif.

This conversion plant will serve as a pilot unit to demonstrate the size and other factors involved for extrapolation to capacities of 5 to 10 million gallons a day and will be used to search out the most economical methods of extracting potable water from sea water.

Our engineers plan to utilize a new principle in the distillation equipment for this application. The development, under study for several years, greatly reduces the required heat-transfer surface and pumping power, important cost factors.

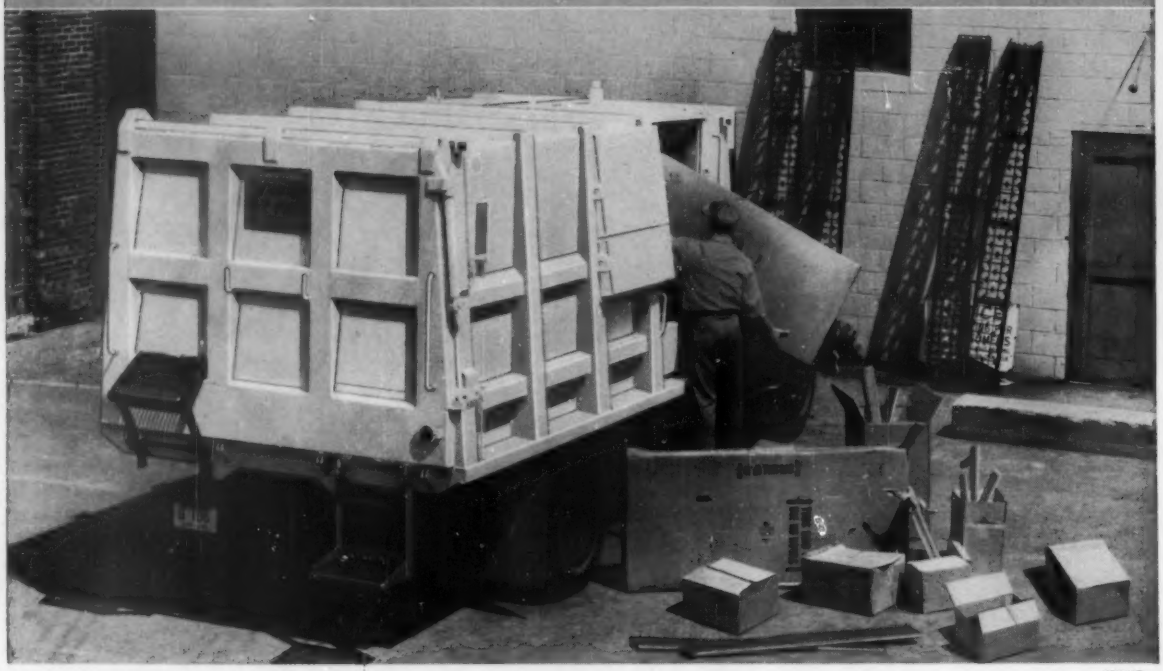
Edison officials point out that the pilot plant will not be of sufficient size to freshen enough water for commercial use but will be used to supply some of the fresh water needs of the Mandalay Steam Station. Although this plant is not expected to compete in cost with present Southern California sources, such plants could be important to local areas of high water costs—and as equipment and operating costs are driven down through research, development and testing, could have more widespread application.

Regarding existing processes, we

Sea-Water Distilling Plant Costs

(1,000,000 gpd net output)

		A	B
1.	Investment	$1,534,900	$1,000,000
2.	Working Capital	61,000	55,000
3.	Operating Costs	Dollars Per Day	
	Fuel and Power	$550	$550
	Amortization	300	200
	Other	165	150
		$1015	$900
4.	Dollars per Thousand Gallons	$1.02	$0.90



5913

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Just one Hydro E-Z Pack unit is enough to pick up residential and commercial garbage and trash. Garbage, tree limbs, cartons, crates and "you-name-it" are tightly compacted in one load by the Big Squeeze Bulldozer. This compaction makes every load a "baled" load. E-Z Pack can eliminate three or more open trucks or ordinary packers. Make more routes in less time, fewer trips to the dump, and use less labor all around. Means lower costs for cities, more profit for contractors.

Prove it! Ask for a demonstration of Hydro E-Z Pack right on your route, or write for free copy of "The Big Squeeze."

COMMERCIAL—No need to break down large cartons or crates; E-Z Pack takes 'em as is!

YARD TRASH—Tree limbs and trash are all compacted by 76,000 lbs. pressure in one load!

RESIDENTIAL—Garbage, ashes, junk, tree limbs, leaves, cartons, trash; E-Z Pack takes everything!

Hydro E-Z PACK

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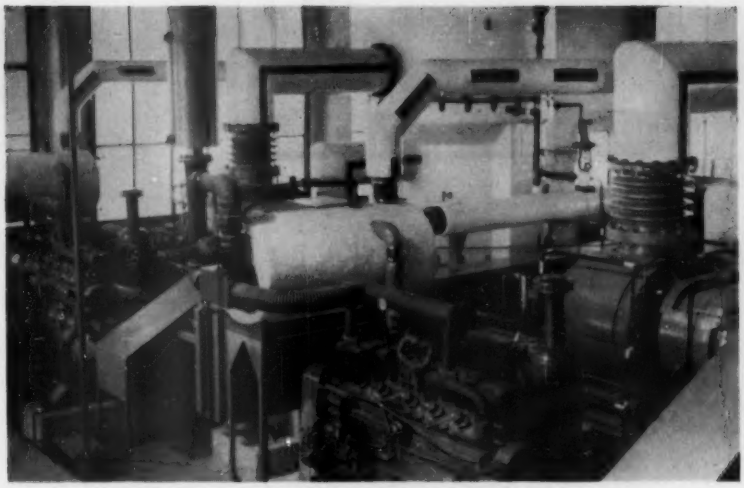
HYDRO E-Z PACK—DIVISION OF HERCULES GALION PRODUCTS, INC., GALION, OHIO — U.S.A.



Over 50,000 gallons of distilled water a day are provided by these desalting units in Port Etienne, French West Africa. The units are diesel driven.

always have employed evaporating means for conversion, although our policy does not limit us to this technique. We continually search for more economical methods regardless of what the processes might be, but to date have found no way to supplant evaporation, which we classify in the following categories:

1. Submerged Tube—Some plants of this old and widely used design are among the most successful installations from a mechanical standpoint. However, some basic limitations to this system suggest that the present trend to other types will continue.

2. Long Tube Vertical—The U. S. Government's Office of Saline Water has done some research and pilot-plant work on the long-tube vertical plant and has selected it as the first of five demonstration plants covered by the Anderson Bill and recently approved by Congress. There are no installations on record of this type of plant for sea water, although it has been used for salt brines. Apparently, the success of this type of plant is contingent on a feed-treatment system which will prevent scale formation and insure corrosion control so that steel tubes can be used.

3. Vapor Compression—Where the raw water can be readily treated by softening, this is, perhaps, the most favorable method known today. It is usually used for sea-water-evaporating applications which fall within these approximate limits:

a. Relatively small plants, up to 200,000 gallons per day.
b. Fuel difficult to procure or relatively expensive.
c. Good maintenance facilities.
d. The first cost is favorable.

This type is a good choice when waste heat can be used, as, for example, for diesel engines. When combined with a power plant using steam from condensing - extraction turbines, the cost of water is about $1 per thousand gallons.

This process, too, has limitations which preclude it from consideration for large-scale sea-water plants now. Future improvements may make it more favorable, if not one of the best ultimate answers. The low energy requirement is attractive where primary energy must be used as compared with waste heat.

Although the first cost would be high, it is interesting to contemplate that with enough heating surface and an efficient compressor, a machine using this process could be built today which would come closer to the theoretical 2.8 kw hour per thousand gallons of pure water from sea water than any other available process.

4. Multi-Stage Flash—In recent years our efforts in research, design, and manufacturing have been mainly concentrated on the low-temperature multi-stage flash evaporator for marine and land-based applications. We continue to offer vapor-compression and submerged-tube types but the flash evaporator is more widely applicable for the following reasons:

a. It operates substantially without scale.
b. It is simple to operate and maintain, and there are few controls and moving parts.
c. It can make use of a relatively low-level heat source.

Future Research

The conversion of sea water for agricultural use still has a long way to go. There appears to be no factual evidence today which suggests that a price appreciably below $100 per acre foot, if all costs are considered, will be attained in the near future. There is, moreover, room for doubt that a figure this low can be attained with any process now known. Our figures suggest a minimum somewhere around 70 cents per thousand gallons.

With regard to reduction of costs it is difficult to visualize a cost as low as 50 cents per thousand gallons in any type of process which must be confined in a plant, such as in an evaporating plant, electrolytic cells, or other devices. In Milwaukee, for example, water is obtained very simply by pumping it out of Lake Michigan, followed by filtration. Selling price is about $70 per acre foot. Imagine a hypothetical sea water conversion plant and assume that this cost at least would be incurred just for pumping alone.

In addition, we need power or heat to separate the salts from the water. This figure is theoretically 2.8 kw hours per 1,000 gallons. Present processes are from 3% to 5% efficient. If we ultimately have a process that is 20% efficient, about 14 kw hours per 1,000 gallons will be required for separation only. At seven mills per kw hour, this would amount to approximately $30 per acre foot.

Then let us further assume that the process itself would cost only an additional $70 per acre foot. Totaling the above, we have a cost of $170 per acre foot, or about 50¢ per 1,000 gallons, which seems to be about the minimum for a confined process.

Still Lower Costs

For costs lower than this, the process must ultimately be one where some "free" natural energy and facilities can be largely employed. Cloud seeding would be one such process. Another might be in the biological field, the separation being accomplished by plant or animal life.

This PAYLOADER® is

"Best piece of equipment we have ever purchased"

"The H-70 'PAYLOADER' with Drott 4-in-1 bucket is the best piece of equipment that we have ever purchased," says Peter J. Ellis, Vice President, Glenmar Construction Co., Inc., Rockville, Md. "It will move more dirt than any two competitive loaders that we have ever owned. We don't know how we ever did a job without it."

"Most useful machine I have ever used"

"I am using the H-70 with 4-in-1 in all phases of this contract," says Max Hutchinson, Glenmar's foreman. "The 4-in-1 versatility on rubber tires makes it the most useful single machine that I have ever experienced using in my 15 years of pipe work. Gives unlimited advantages that can't be determined until the need arises. Saves time and operating cost."

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1. Glenmar's H-70 loading out excavated dirt unsuitable for backfill. The clam action of the 4-in-1 bucket does the job neatly and cleanly.

2. The powerful hydraulic clam action also grasps and moves old concrete curbing and chunks.

3. Pipe ranges up to 54" diameter — is carried to position for lowering-in.

4. Bulldozing, backfilling the trench, leveling and grading are also "PAYLOADER" jobs on this project.

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For better lighted streets and highways the STANDARD is KERRIGAN!

The City Tells Its Story

Edited by PAN DODD EIMON
Consultant, Municipal Public Relations

Municipal Public Relations

High Schools Work on Real Problems In Classes Aimed at Better Home Towns

Get teen-agers productively busy promoting useful city improvements, and you insure that they will be good citizens, able to support progressive local government when they become voters.

City officials in a hundred small towns of Missouri, Iowa, and Illinois are doing just that. Their high schools are participating in the Planned Progress Program sponsored by the Union Electric Co., the Missouri Edison Co., and the Missouri Power and Light Co. (The adult phase of the program was the subject of "The City Tells Its Story" last month.)

In the program, high school students survey community needs, learn about town planning, and influence adult action by telling grownups what they discover and what they think about, hope for, and want in their home town. As a result of this high school program, there's a new park project well under way in St. Clair, Mo.; Farmington, Mo. is going to have better library facilities; and St. Paul, Iowa is getting a beauty treatment; Desloge, Mo. has put up new street lights; Esther and Doe Run now have street-name signs.

Planned Progress is an integral part of the student's education. Ten class periods are devoted to it. The work is done as a laboratory exercise by classes in civics, citizenship, or American problems; done by a student council; or done as a project of the freshman, sophomore, junior, or senior classes.

The students plan and organize their activity and do the work involved. The teacher advises and directs. The program sponsors provide technical help, printed guides for teachers and students, and contest awards (cash or educational tours).

School authorities come first. The city government and school authorities must agree on the community-educational program to be developed. Decisions—about which classes within a high school are to undertake the project, scheduling of work periods, the amount of work and study to be done—are up to the educators.

Some of the courses must provide students with information about the community and, if possible, with experience in determining facts, weighing them, and making decisions based upon them.

. . . Then the students. The program gives students a chance to contact the public, make decisions about important community affairs, and compete for awards. All these factors motivate the student. The sponsors, teachers, and town officials may share in introducing the program to students.

Doing the job. Procedures vary, depending on the project selected. For the first project, "Discovering a Needed Improvement," here is how the students proceed:

First, the class rates the community. Planned Progress uses an eight-page rating form with questions that can be answered "yes" or "no." It covers business and industry, beautification, recreation, education and culture, health and sanitation, and other municipal developments. Some of the rating can be done from information already available, after student discussion. Most of it, however, requires some research—checking at city hall, the water department, the city engineer, park superintendent and other knowledgeable municipal officials.

Next, the class chooses a category for more detailed research. For illustrative purposes, let's have the class select health and sanitation as its category for concentrated study.

The next step is for the class to prepare a listing of needed improvements within the chosen category.

In the health and sanitation field, for example, students may feel that the community needs a health clinic, regulations on uniform garbage cans, an insect-control program, and a review of sanitary laws with possible revision of existing laws and adoption of model codes. They decide to drop the last-named proposal because it involves legal and technical problems which they cannot handle. Their listing of improvements, then, includes the health clinic, uniform garbage cans, and an insect-control program.

Now the students are ready to find out what citizens in the community think about these proposals and which they would support. Questionnaires are either filled out in person-to-person interviews or are mailed or left with householders for later pickup. Tabulation of citizen attitudes is done in class with all class members participating.

Students now decide on a single project or activity which 1) they feel is vital and 2) citizens indicated, in the survey, they want and will back. Most classes decide on one large goal or two or three smaller related ones.

For a second project, "Preparing the Land Use Map," students begin with two black-and-white maps of the town or city. They will prepare a first map to show streets, rivers, railroads, boundaries, schools, churches, public buildings, cemeteries, parks, business places, industries, residential areas, and other items of importance. The map is colored—red for commercial areas, yellow for residential, blue for industry, green for park and public areas.

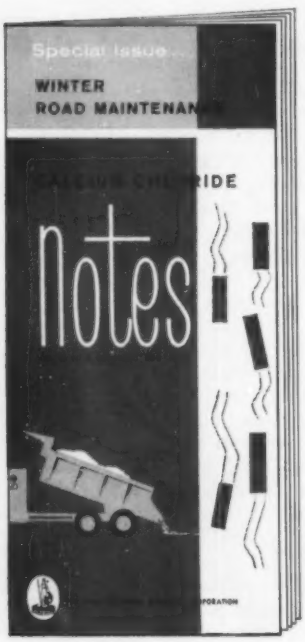
The class studies this map, points out physical problems of the community and lists them. Symbols are placed on the map to identify problem areas.

Doing this allows for study of orderly arrangement of the community. Students learn, for example, that business houses in an

"why should I use calcium chloride-rock salt mixtures for ice control?"

The advantages are outstanding . . .

Effective—at *all* temperatures • **Faster Melting**—calcium chloride triggers action of the rock salt • **Easily Stored**—in the open under tarpaulin or sheds • **Economical**—greatly increased effectiveness with little or no increase in cost • **Adaptable**—to bulk shipments of both calcium chloride and rock salt • **Best Way**—to maintain bare pavements



This booklet contains the latest information including: why mixtures work better • how and in what percentages to store • mixing methods • recommendations for various storm conditions

WRITE TODAY for the assistance you desire

- ☐ Please send me free booklet
- ☐ Information on mixtures
- ☐ Information on treated abrasives
- ☐ Have engineer call

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area should be compatible. Those with abnormal smoke, noise, or congestion should be removed from other business and residential areas. Parking facilities, traffic troubles, subdivision development, street-naming, school, park, and community-center arrangement, historical sites, and industrial parks are among topics discussed.

A second map is then prepared. It shows the community as students would like to see it develop. The teacher helps students decide on changes that are within the realm of possibility. City officials and planning technicians (from state or private firms, if there is no local planner) may be invited to help.

Presenting findings to the public. Students are anxious to "sell" grownups on their ideas after they have completed these steps. They may present their findings by making talks, conducting a panel discussion, or presenting a skit, with visual aids and commentary.

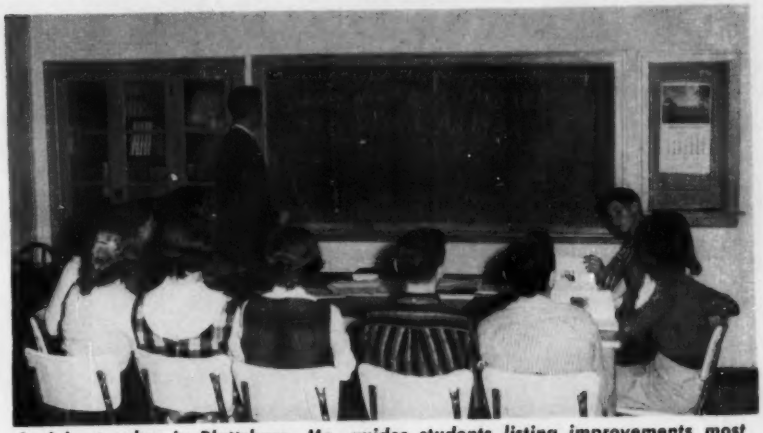
Students practice their presentation before a high school assembly. This is a dress rehearsal before a live audience. It also allows the study group to share their project with the entire high school.

Later, students appear before groups in the town or city. Where it is possible, the mayor, manager, or other city official may introduce or conclude the presentation.

What students learn from their work is of primary importance. Whether or not their recommendations are carried out is secondary. However, in many communities where the high school Planned Progress has operated, student recommendations have been adopted. Often high schoolers' enthusiasm has provided just the push city officials needed to rally support.

The grand finale. In the Planned Progress schedule, student representatives (there is a limit of five from any one high school) tell the story of their school's project. This is done at a dinner for which sponsors are the hosts. Judges score the presentations and awards are made by the electric companies to the winning high school groups.

The possible benefits of such a program for the city government are many: better-informed high schoolers, aroused adult citizens, intelligent focus on community needs, backing for city government efforts to meet or correct community problems, new interest in and support for the community on the part of civic groups.



A civics teacher in Plattsburg, Mo. guides students listing improvements most needed in the town. The listing is based on the student "home-town rating" and the public opinion survey.

Research, book work, and planning go into the Plattsburg teen-agers' presentation of town needs to an adult audience.

Fred Cole, Missouri State Department of Education, moderates a community improvement presentation; participants from four high schools competed.

SWEEPER'S 3 POWERFUL BROOMS rotate in vacuum-equipped housing, sweep 7'4" path.

SWEPT CLEAN AS YOUR OFFICE FLOOR. The Tennant 100's efficient filter gets virtually *all* the dirt . . . even particles as fine as 5 microns . . . invisible to the human eye. The Tennant 100 sets a new cleaning standard for cities and airports.

Now...year-around sweeping!

New Tennant *Vacuumized* Sweeper controls dust without water

Dust-free sweeping in below-freezing weather is now possible . . . with the new TENNANT Model 100 *Vacuumized* Sweeper.

Powerful broom-and-vacuum system picks up the fine dust that's usually missed . . . as well as heavy, bulky debris. A huge 540 square foot filter gives almost perfect dust control. There's no need for water spray... thus no winter freeze-up problem.

This means your town can now have ultra-clean sweeping *even on the coldest winter days!*

The new TENNANT 100 offers many other *exclusive* benefits to the progressive community which takes pride in a reputation for tidiness.

WRITE TODAY *for illustrated bulletins, photos, and performance data.* G. H. Tennant Co., 751M N. Lilac Drive, Minneapolis 22, Minnesota.

NO DIRT ON THIS RAMP. Sand and other small foreign objects can do thousands of dollars damage if they are sucked into the engines of modern jet aircraft. That's why the Tennant Model 100 has been chosen to sweep modern jet airports like N. V. Luchthaven Schiphol in Holland.

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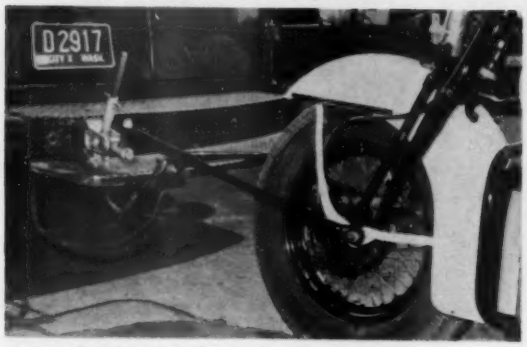
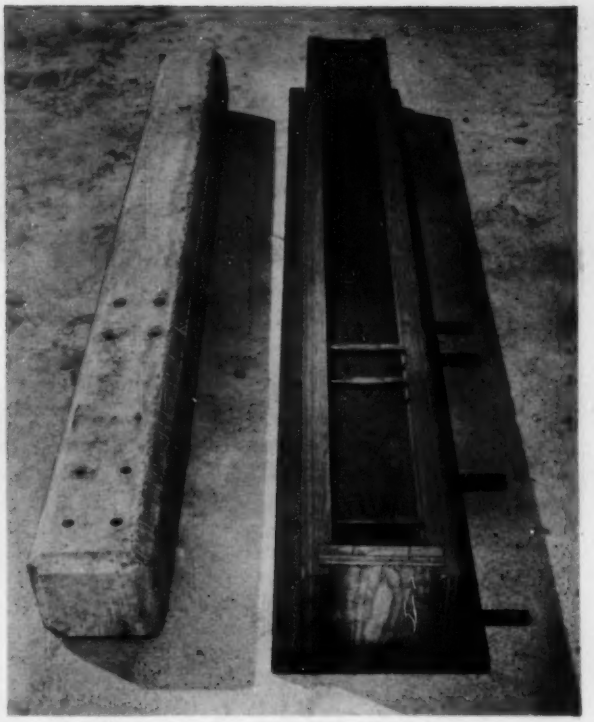
Power Sweepers | Traffic Line Erasers | Concrete Routers

SPECIALIZED MAINTENANCE EQUIPMENT

A protective steel ring around the gutter broom of a sweeper won $30 for Sam Rabjohn.



A tow bracket for three-wheel motorcycles won Clarence Cratteau $15.



A handy form to make guard-rail posts from excess concrete at construction jobs earned George Simpson $75.

Our Employee-Suggestion Awards Pay Big Dividends

In Tacoma, Wash., cash for employee suggestions brings two-way benefits

By D. D. ROWLANDS*

Tacoma has been investing in employee suggestions for greater efficiency; this program has been earning big dividends in two important ways:

- **First, the city has been able to realize substantial economies.**
- **Second, the employees themselves now take a new, more personal interest in their work, performing their duties with increasing effectiveness.**

During its first year of operation, the City of Tacoma Suggestion Award Board received 75 suggestions. Of these, 12 were accepted for awards totaling $581. The minimum annual savings resulting from the adoption of these suggestions has been estimated at over $5,000. Thus, the employees themselves have found the money for one man in the lower-salary bracket.

The size of these awards has varied from $15 to $100. We award 10% of the estimated savings that the employee's suggestion will realize, with a maximum award of $100. Suggestions resulting in improvements of a less tangible nature receive a standard award of $25.

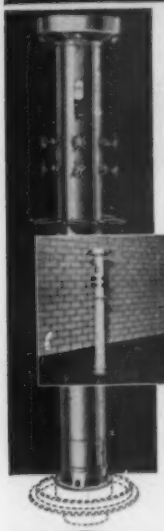
Employee acceptance of the program has been excellent. The recognition of employees responsible for improvements in the methods and operations has been well received. This increase in employee morale and improved performance has brought Tacoma efficiency and economy of operation.

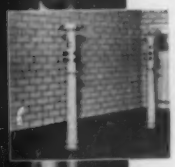
A Suggestion Award Board administers the program. This consists of the heads of most of the major departments of city government. By virtue of their positions, they are able to do much to assure prompt but thorough consideration of each suggestion. Probably more than any other feature of the program, this participation by top-level management has helped to maintain a smooth-running program. Since the program was first inaugurated, the only publicity necessary has been the write-ups of award winners in the employee newsletter and in the local press. The proportion of acceptable suggestions has gradually increased as a result of this publicity since the ideas that receive awards help to guide and stimulate other good ideas.

The Board supplies special forms

* Mr. Rowlands, the city manager of Tacoma, Wash., received his managerial training at the University of Chicago (Master's degree). He is a former city manager of Mt. Lebanon, Pa., and Eau Claire, Wis. He is a past president of the Pennsylvania City Managers' Association and is now president of the Washington State City Managers' Association.

BRADLEY MULTI-PERSON SHOWERS...





Multi-person complete 5-shower unit with partitions and curtains.

Installed as one unit, with ONE set of piping connections, Bradleys provide for 5 showers. Each person has complete control of water volume and temperature. Columns can be used as shown at left, or—provided with stall-separating partitions and curtains.

Bradley Column Showers without separating panels and curtains are widely used in men's and boys' shower rooms. Being so economical to install, ample bathing facilities can be provided at low cost.

For the girls, Group Shower Units are usually equipped with both stall separating panels and curtains.

To arrive at the number of Bradley Multi-Person Showers required, the practical formula is to figure 40 total users for each 5-stall unit.

BRADLEY WASHFOUNTAIN CO., 2333 W. Michigan Street, Milwaukee 1, Wisconsin.

Where center of room space is not available, shower units may be located close to wall and supplied with 3 shower heads instead of 5. Placed in corner, they provide for two.

Write for Catalog 5601

BRADLEY *multi-stall showers*

Distributed Through Plumbing Wholesalers

MOSQUITOES FLIES AND OTHER INSECT PESTS DESTROYED ON CONTACT

TIFA

TODD INSECTICIDAL FOG APPLICATOR

Lowest-Cost Space Control throughout the Community

On the dump, over pools, in suburbs, play areas, stockyards, TIFA gets the kill every time . . . at the lowest operating and maintenance cost. TIFA rapidly covers large areas with true clean fog, penetrates smallest crevices, envelops and destroys all insect pests. This efficiency with newest or older type insecticides, gives you a better insect control program for your community.

BEST by TEST for over 14 years in Community Fly and Mosquito Programs

Carrying Underwriters' Listing Seal MH 4162

Write for illustrated folder with details and official comments.

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to all employees for submitting their suggestions. The Secretary of the Board receives the forms and refers them to the appropriate department for evaluation. The Board meets once a month to consider the contributions. If a suggestion is not adopted, the Secretary sends a letter of appreciation to the employee which states the reason that the suggestion could not be accepted.

The suggestions are all intensely practical and reflect an intimate understanding of our governmental work.

Typical prize-winning awards are the following:

- **A device protecting the gutter broom from abrasion against the curbing. Estimated annual savings—$300. Award—$30.**
- **A way to salvage concrete, ordinarily wasted, by making it into guard-rail posts. Estimated annual savings—$750. Award—$75.**
- **A simple way of transporting three-wheel motorcycles through a tow bracket attached to the rear of Police Department trucks to permit pick-up and delivery by a single shop employee. Estimated annual savings—$150. Award—$15.**
- **Installation of lockers at the city garage for storage of articles that the employee ordinarily keeps in the car assigned to him. This releases the car for service in the vehicle pool rather than tying it up as a storage unit. Award—$100.**
- **A suggested improvement in the validating machine used in the office of the City Treasurer. Award—$30.**

Other Cities with Suggestion Programs

At least seven other local governmental units have employee-suggestion programs similar to Tacoma's. They are: Detroit, Mich.; Memphis, Tenn.; Metropolitan Sanitary District of Greater Chicago; New York City; Philadelphia, Pa.; Seattle, Wash., and Windsor, Ontario, Canada.

The Philadelphia program provides cash payments for efficiency suggestions based on a formula that grants $25 minimum and $500 maximum plus 1% of demonstrable savings above $50,000. Suggestions involving safety, morale, health, receive awards varying from $15 to $250. Currently the city has received about 1,000 suggestions, paid $2,000 in awards. First-year savings from individual suggestions have varied from $50 to $6,000.

PLAN *Low-Cost* BRUSH DISPOSAL-

PLAN ON A FITCHBURG CHIPPER

The exclusive Spring-Activated Feed Plate of the Fitchburg Chipper assures smooth, efficient, SAFE operation. This built-in engineering development, which makes trouble-free operation possible, has been patented.

FAST... ECONOMICAL...

...SAFE

This safety feature is important. "Because of the feed plate with its safety spring the men can't get hurt by any back-throw from the Chipper," explains the Superintendent, The Park and Shade Tree Commissions, Bridgeton, New Jersey.

Please send in the coupon for more information, and for copies of articles on chipping which appeared recently in leading publications. These feature articles describe five methods of brush disposal, and ten new ways to utilize "by-product" chips. Send for your copies, they are well worthwhile.

Plan on *low-cost* disposal of trimmed branches, whether it's for a tree company, utility, highway department, a city, or a park department—plan on getting a Fitchburg Chipper.

This well-engineered and rugged machine turns brush into easy-to-dispose-of chips, at very low cost. Only the Fitchburg Chipper has an exclusive, patented Feed Plate which automatically adjusts for any size brush up to its rated capacity, making it possible to chip large or small material with ease.

This Spring-Activated Feed Plate reduces shock action and horse-power requirements since it permits chipping of larger size wood without extra power. The Feed Plate results in fast, efficient chipping without a heavy, cumbersome fly wheel. The smoother chipping action means lower maintenance, too, as well as greater crew safety.

FITCHBURG ENGINEERING CORPORATION
Dept. AC-119
Fitchburg, Massachusetts

☐ Please send me important articles which describe 5 methods of brush disposal and 10 new ways to utilize brush chips.

☐ Please send more information on Fitchburg Chippers.

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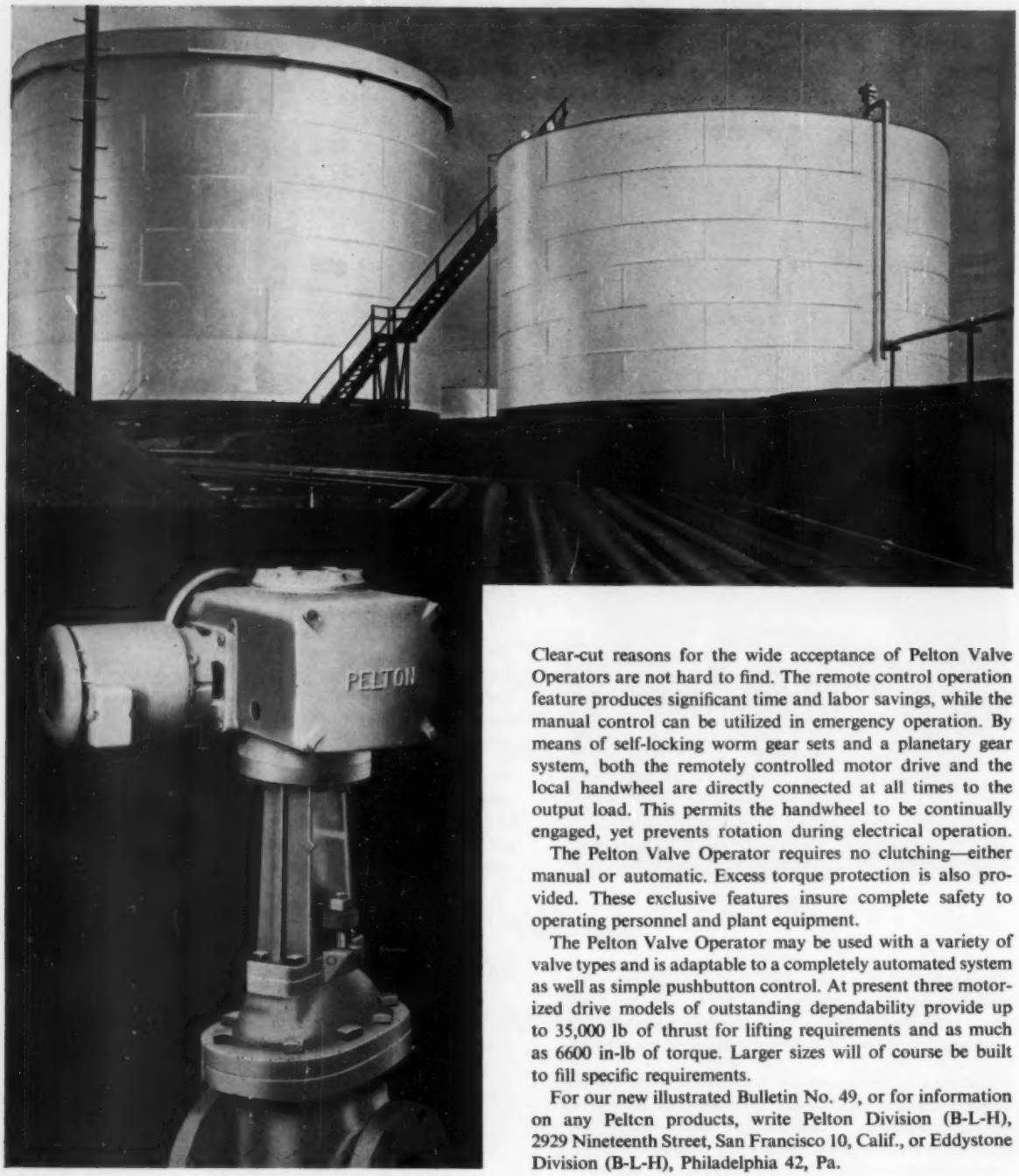
FITCHBURG ENGINEERING CORPORATION FITCHBURG MASS.

Why it will pay you to insist on Pelton Valve Operators



Clear-cut reasons for the wide acceptance of Pelton Valve Operators are not hard to find. The remote control operation feature produces significant time and labor savings, while the manual control can be utilized in emergency operation. By means of self-locking worm gear sets and a planetary gear system, both the remotely controlled motor drive and the local handwheel are directly connected at all times to the output load. This permits the handwheel to be continually engaged, yet prevents rotation during electrical operation.

The Pelton Valve Operator requires no clutching—either manual or automatic. Excess torque protection is also provided. These exclusive features insure complete safety to operating personnel and plant equipment.

The Pelton Valve Operator may be used with a variety of valve types and is adaptable to a completely automated system as well as simple pushbutton control. At present three motorized drive models of outstanding dependability provide up to 35,000 lb of thrust for lifting requirements and as much as 6600 in-lb of torque. Larger sizes will of course be built to fill specific requirements.

For our new illustrated Bulletin No. 49, or for information on any Pelton products, write Pelton Division (B-L-H), 2929 Nineteenth Street, San Francisco 10, Calif., or Eddystone Division (B-L-H), Philadelphia 42, Pa.

Pelton Division San Francisco, Calif.

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Modern Water Rates PART XI

Nuisance Charges

Here and there, among even well-run water works, one finds nuisance charges once instituted primarily to penalize the late paying customer. Actually, all they do is annoy the good customers, inspire resentment, and undermine confidence in an organization whose loyalty and dedication to purpose does not deserve this sort of treatment.

As long ago as 1947 the late E. E. Norman, at that time manager of the Kalamazoo, Mich., City Light and Water Utilities, raised his voice in protest against these practices at the annual meeting of the American Water Works Association. The substance of his protest is worth restudying now. He showed that the penalties not only complicate bookkeeping and make the public angry but also fail to stimulate the collection of back bills. Here are some that he listed:

The turn-on charge—frequently made when the water user fails to pay his bill. This charge often places a penalty against a customer who has been paying promptly for years and then misses through oversight.

The repair-trip charge—made when a customer reports a maintenance problem; this actually works against the best interests of the water utility by discouraging any report of water difficulties. A water works should be glad to respond promptly to a customer's request for service.

Meter purchase—a practice no other business would consider. It is difficult to justify making the customer purchase a device that he cannot control and that makes a charge against him.

Meter repair charge—no more logical than the meter purchase charge. The customer cannot help it if the meter fails and it always is to his advantage to let it get out of adjustment. Meters never run fast unless deliberately set so by the water utility.

Hot-water meter-damage charge—actually a result of customer carelessness; however, one warning generally suffices. Recurrences of hot-water damage are rare.

Frozen-meter-damage charge—also a result of customer negligence; however advice on how to correct this difficulty generally suffices.

Meter-rent charge—illogical; why should anyone have to pay rent on an instrument that makes a charge against him?

Meter-test charge—contrary to the best interests of the water works for an inaccurate meter always favors the water user. A water works should gladly test a meter without charge at any time. It can, however, request that the customer witness the test.

Service-connection repair charge—completely illogical to the customer when the service needing repair is between the meter and the main. The customer recognizes that a leak is occurring, but knows also that he is not being charged for the water. A well-run water works should accept responsibility for all services up to the point where it enters the meter.

Holding water bills as a lien against the property—a poor practice, that actually doesn't help much in getting bills paid. If the water works manager is not smart enough to collect the bill when the tenant moves, how can he expect the property owner to make the collection for him?

"These nuisance charges," said Mr. Norman, "are not worth what they cost, and they cost plenty."

ALLENDALE, N. J.

Rates Per Quarter

Gallons	*Per 1000 Gallons*
First 6,000	$4.00 (Minimum)
Excess	.40

Minimum Quarterly Charges

For all sizes of meters $4.00

Typical Quarterly Costs

Gallons	*Cubic Feet*	*Charge*
9,000	1,200	$5.20
15,000	2,000	7.60
30,000	4,000	13.60

General Data

Population served 3,650
Miles of mains 20
Services (100% *metered*): A total of 1,050
Supply—Wells
Treatment — Hypochlorination on two wells.
Plant capacity ..... .3 mgd
Average demand ..... .2 mgd

Remarks

1. Service lines are not provided by the utility but it maintains them from main to curb line.
2. Utility provides none of the cost of new mains.
3. Sewerage disposal is provided by privately-owned septic tanks.
4. Automatic billing equipment is not used.

(Continued on page 194)

It's New!
NOW—AT LAST A MEASURING WHEEL THAT MEASURES ACCURATELY TO A FRACTION OF AN INCH!

Rolatape's amazing new Model 415 meets all your measuring needs — measuring quickly and surely over the most uneven and irregular terrain with no risk of human error. This time-saving instrument is calibrated to measure accurately in full view of operator as it is rolled along, giving measurements in inches (to ½ inch) on one side of measuring wheel, and tenths of a foot (to .5 of a foot) on the other. Sturdy and lightweight, it is equipped with automatic brake and built-in stand. Handle folds compactly. See one at your dealer's today.

MEASURES ACCURATELY ON IRREGULAR SURFACES

SEND TODAY FOR FULL DETAILS

ROLATAPE Inc.
1741 14th Street,
Santa Monica, Calif.
Send me free details on ROLATAPE:
NAME_____
FIRM_____
ADDRESS_____
CITY, STATE_____

5. Water rates were revised in 1958. An increase of 33⅓% did not affect water use. Further adjustment is not needed at present.

CHRISTOPHER J. RYAN
Superintendent
Allendale Water Department
Allendale, New Jersey

CHARLESTON, S. C.

Rates Per Quarter

Cubic Feet		*Per 100 Cubic Feet In City*	*Outside*
First	10,000	$0.20	$0.33
Next	20,000	.18½	.30
"	70,000	.17	.27
"	200,000	.15	.23
"	700,000	.13	.20
"	1,500,000	.11	.17
"	3,500,000	.09½	.17
Excess		.08	.17

Minimum Quarterly Charges

Meter Size (in inches)	*Charge In City*	*Outside*
¾	$ 3.00	$ 4.50
1	5.00	7.00
1½	12.50	18.00
2	25.00	36.00
3	60.00	90.00
4	125.00	225.00
6	200.00	360.00

Fire Protection

The following charges for private fire protection are based on connections made for fire use only.

Connection Size (in inches)	*Charge (per annum)*
1	$ 15.00
1½	25.00
2	35.00
3	40.00
4	50.00
6	150.00

When a connection is made to supply an automatic sprinkler system exclusively, a charge of not more than $50 per year will be made.

Typical Quarterly Costs

Gallons	*Cubic Feet*	*In City*	*Outside*
9,000	1,200 (Min.)	$3.00	$ 4.50
15,000	2,000	4.00	6.60
30,000	4,000	8.00	13.20

General Data

Population served 130,000
Miles of mains 350

Services	*Number*	*% Metered*
Domestic	31,000	100
Commercial	525	100
Other	100	...

Supply—Edisto River, Goose Creek, Bushy Park.
Treatment—Chlorine, alum, caustic soda. At times, copper sulphate and sodium aluminate.
Plant capacity ..... 25-30 mgd
Average demand ..... 14-15 mgd

Remarks

1. Utility provides service line to property only.
2. Utility maintains main extensions in city, but city has 100% of mains needed in city, so question of whether city or developer pays for new mains does not apply.
3. Water and sewer services are not operated by the same department. Sewer service charges are covered by taxes.
4. In billing, National Cash Register automatic equipment is used.
5. Water rates were increased in 1956. Water use was affected somewhat. Further adjustment is not needed at present.

JOHN R. BETTIS
Manager and Engineer
Commissioners of Public Works
Charleston, South Carolina

COLUMBIA, MO.

Rates Per Month

(plus Sales Tax)

Cubic Feet		*Per 100 Cubic Feet In City*	*Outside*
First	200	$.60	$.78
Next	300	.45	.59
"	1,500	.35	.46
Excess		.25	.33

Minimum Monthly Charges

	In City	*Outside*
For all meter sizes	$1.20	$1.56

Fire Protection

Fire hydrants installed within city limits are financed from income received from the City General Government as "fire hydrant rentals." Outside city, applicant pays all expenses.

Typical Monthly Costs

Gallons	*Cubic Feet*	*Charge In City*	*Outside*
3,000	400	$2.10	$2.74
5,000	667	3.13	4.10
10,000	1,333	5.47	7.17

General Data

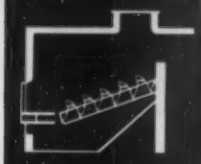
Population served 48,000
Miles of mains 100
Services: Total of 8,076, 100% metered
Supply—Deep well
Treatment—Aeration and chlorination
Plant capacity ..... 4.9 mgd
Average demand ..... 3½ mgd

Remarks

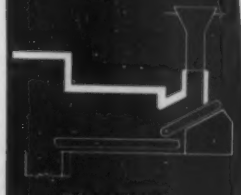
1. Utility provides service line to property only.
2. Utility pays approximately half the cost of new main extensions within city limits. Outside city consumer pays whole cost.
3. The Columbia Water & Light Department does not operate sewer services, but it bills for them along with the water bill.
4. National Cash Register and Burroughs equipment is used for automatic billing.

(Continued on page 197)

NICHOLS MONOHEARTH


ROCKER GRATE

VERTICAL MONOHEARTH


TRAVELING GRATE

PROGRESS REPORT FROM NICHOLS

Nichols offers the municipality the refuse incinerator best suited to its requirements. Some of the latest Nichols clients are:

NEW YORK, N. Y.—1,000 ton plant under construction, incorporating four 250 ton traveling grate furnaces.
Engineers: N. Y. Dept. of Public Works.

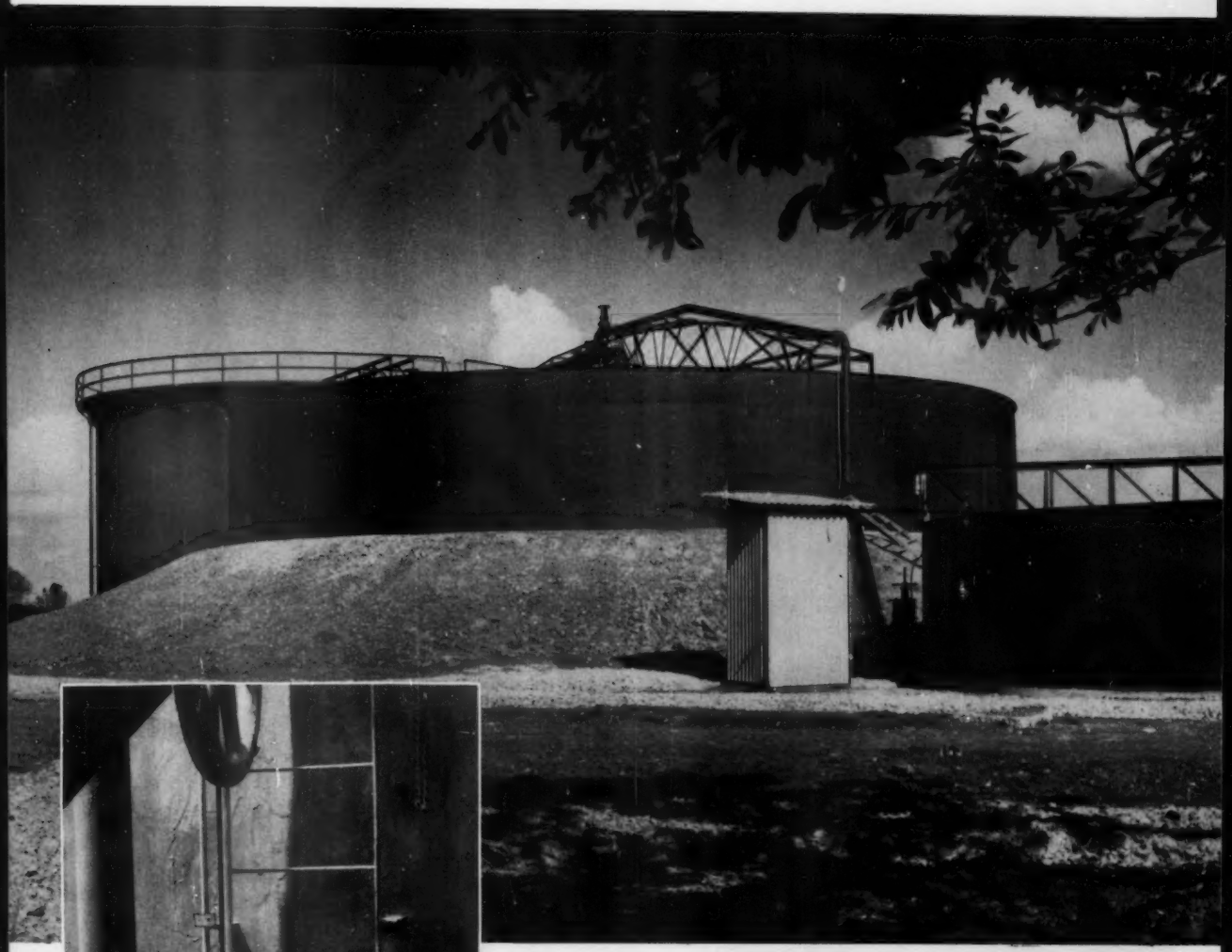
DELAWARE COUNTY, PENNA.—500 ton plant under construction, with two 250 ton traveling grate units.
Engineers: Damon & Foster
Philip Streander

WATERTOWN, MASS.—250 ton plant under construction, with two 125 ton Nichols MONOHEARTH units and air pollution control.
Engineers: Hayden, Harding & Buchanan.

RYE, N. Y.—150 ton plant in operation. Two 75 ton Nichols MONOHEARTH units.
Engineer: Henry Taylor

HALIFAX, NOVA SCOTIA—400 ton plant under construction, with two 200 ton traveling grate units.
Engineers: Metcalf & Eddy.

NICHOLS ENGINEERING & RESEARCH CORP.
70 Pine St., New York, New York
3513 N. Hovey St., Indianapolis 18, Ind.
405 Montgomery St., San Francisco 4, Calif.
1477 Sherbrooke St. W., Montreal 25, Canada



J. B. Dannenbaum, Consulting Engineer of Houston, notes:

"Bitumastic No. 50 given only minor touch-up in 12 years on Solarobic* Process tanks"

The Solarobic Process, developed by J. B. Dannenbaum, uses steel for Imhoff, trickling bed and clarifier tanks at considerable saving in construction costs. Thirty such plants have been installed since 1947: the large illustration shows a new plant at Angleton, Texas, built to serve a population of 10,000. The inset photo shows the excellent condition of the Bitumastic® coatings on the pioneer installation.

Mr. Dannenbaum has standardized on a double thickness of Bitumastic No. 50 for corrosion prevention on both inner and outer tank surfaces. The thick dry-film characteristics of this coating system gives it long life: "In 12 years experience with Bitumastic No. 50 on both steel and concrete, no maintenance other than touch-up has been required," states Mr. Dannenbaum.

Bitumastic protective coatings, with their waterproof coal tar base, have long been popular for sewage plant protection. For more information on their applications in this field, fill out the coupon. Koppers Company, Inc., Tar Products Division, Pittsburgh 19, Pa. District Offices: Boston, Chicago, New York, Los Angeles, Pittsburgh and Woodward (Birmingham) Ala. In Canada: Koppers Products, Ltd., Toronto.

*Patent pending

KOPPERS

BITUMASTIC

COATINGS AND ENAMELS

another fine product of COAL TAR

KOPPERS COMPANY, INC., Tar Products Division
Dept 103L Pittsburgh 19, Pa.

Please send me your brochure "SEWAGE PLANT PROTECTION."

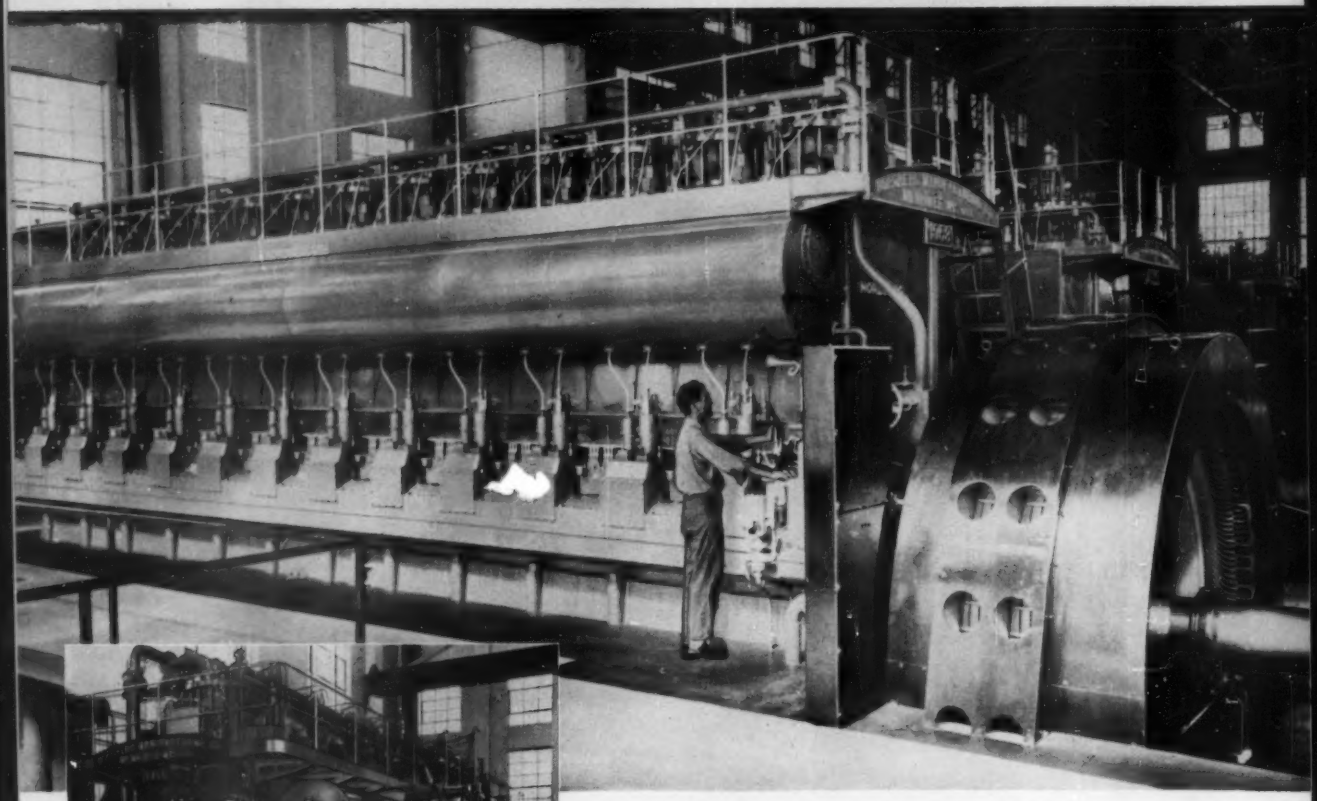
Name_____ Title_____

Firm_____

Address_____

City_____ Zone_____ State_____

Why taxpayers vote YES ☒ for money-saving diesel power



In Ponca City, Oklahoma . . .

9 NORDBERG ENGINES help make a net profit of almost $1,000,000 a year

The world's largest dual fuel engine is helping the Ponca City, Oklahoma municipal power plant attain new records in production volume, operating economy, and net profits. This 8,500 horsepower Nordberg Duafuel® unit (shown at left), together with eight other Nordberg engines in this notable plant, produced a total of over 55 million kilowatt-hours in the fiscal year ended June 30, 1958, at a total production cost of just 5.67 mills per kwh. *Net profit for the year was over $920,000.00, and net plant profit for 10 years exceeded $7,000,000.00.*

Ponca City and its Light Department owe much to experienced Superintendent of Utilities Pat Schlesinger, who not only directs operations but engineered the big installation. This highly successful municipal plant is a joint achievement, with credit due to Mr. Schlesinger's able staff and to the many present and past city officials who cooperated in the development of this efficient and profitable municipal utility . . . an outstanding example for other municipalities to follow.

POWER PLANT PROGRESS

1924—First 1250 hp Nordberg Diesel installed at Ponca City.

1926—Second 1250 hp Nordberg Diesel installed at Ponca City.

1928—Two more 1250 hp Nordberg Diesels installed.

1937—2250 hp Nordberg Diesel started (converted to dual fuel in 1947).

1947—2400 hp Nordberg Duafuel engine installed.

1949—3600 hp Nordberg Duafuel unit added, one 1250 hp unit retired.

1952—4275 hp Nordberg Duafuel engine went into service.

1953—5135 hp Nordberg Duafuel installed.

1955—Ponca City's latest addition—10-cylinder, 29" bore x 40" stroke Nordberg Duafuel engine, rated 8500 horsepower.

©1959, N. M. CO.

NORDBERG MANUFACTURING COMPANY · Milwaukee 1, Wisconsin

ATLANTA • CLEVELAND • DALLAS • DULUTH • HOUSTON • KANSAS CITY • MINNEAPOLIS • NEW ORLEANS • NEW YORK • ST. LOUIS
SAN FRANCISCO • TAMPA • WASHINGTON • TORONTO • VANCOUVER • JOHANNESBURG • LONDON • MEXICO, D. F.

5. Water rates were last revised in January 1958, when they were increased 46%. Further adjustment is not needed at present.

FRANK H. SKELLY
Director
Water and Light Department
City of Columbia, Missouri

JAMESTOWN, N. Y.

Rates Per Quarter

Cubic Feet	*Per 100 Cubic Feet In City*	*Outside*
First 375,000	$0.27	$0.27
Excess	.20	.25

Minimum Quarterly Charges

(Both in city and outside)

⅝ & ¾	$2.15
1	5.50
1½	11.00
2	19.00
3	38.00
4	76.00
6	150.00
8	250.00

Fire Protection

Public:
Per hydrant per year .... In City $35.00
Outside 45.00

Private:
8", 6" and 4" connections, per annum $216.00
3" and 2" connections, per annum 65.00
Yard hydrants owned and maintained by consumers on their property and not attached to the general private fire protection service, each, per annum: $34.00

Typical Quarterly Costs

Gallons	*Cubic Feet*	*Charge*
9,000	1,200	$3.32
15,000	2,000	5.40
30,000	4,000	10.80

General Data

Population served	50,000
Miles of mains	159.07
Services: Total of 12,941, 99.8%	metered
Supply—Wells	
Treatment—None	
Plant capacity	7.5 mgd
Average demand	5.2 mgd

Remarks

1. Service lines are paid for by the property owner and maintained by the Water Department outside the city. Inside city limits the Water Department provides service line to property.
2. The Water Department provides 150 feet of main extension for each consumer; property owner pays balance.
3. No charge is made for sewer service.
4. A Remington Rand electric billing machine is used for automatic billing.
5. Water rates were increased by 35% in 1956. Water use was not affected and further adjustment is not needed at present.

MERLE W. SMEDBERG
Superintendent of Public Utilities
Board of Public Utilities
Jamestown, New York

JOHNSTOWN, PA.

Rates Per Quarter

Gallons		*Per 1000 Pumping System*	*Gallons Gravity System*
First 3,000	(Min. of)	$5.00	$4.00
Next 3,000	.....	1.47	1.15
" 14,000	.....	1.24	.94
" 80,000	.....	.90	.64
" 100,000	.....	.63	.40
" 100,000	.....	.49	.29
" 100,000	.....	.40	.23
Excess		.32	.19½

Minimum Quarterly Charges

Meter Size (in inches)	*Charge Pumping*	*Gravity*
⅝	$5.00	$4.00
¾	8.00	8.00
1	12.00	12.00
1½	22.00	22.00
2	35.00	35.00
4	150.00	150.00
6	340.00	340.00

Fire Protection

To the City of Johnstown, including pipe mileage October 20, 1926, and 357 hydrants ..... $31,350 per annum

Private Fire Service	*Per Annum*
2" fire service line, each ...	$72.00
4" fire service line, each ...	150.00
6" fire service line, each ...	300.00
Private fire hydrant, each ...	100.00

Typical Quarterly Costs

Gallons	*Cubic Feet*	*Charge Pumping*	*Gravity*
9,000	1,200	$13.13	$10.27
15,000	2,000	20.57	15.91
30,000	4,000	35.77	27.01

General Data

Population served	100,000
Miles of mains	212
Services (100% *metered*):	
Domestic	21,365
Commercial	908
Other	198
Supply—Impounding reservoirs	
Treatment—Chlorination	
Reserve capacity ... 1,427 million	gallons
Average demand	9.5 mgd

Remarks

1. Utility provides service from main to curb, including curb cock and curb box.
2. Utility provides 35 feet of main extension free to each new customer.
3. The Johnstown Water Company has nothing to do with sewer services.
4. IBM automatic equipment is used for billing.
5. Water rates were increased 25% in 1957. Water use was not affected and further adjustment is not needed now.

GEORGE C. BUCHANAN
Engineer
Johnstown Water Company
Johnstown, Pennsylvania

NASHVILLE, TENN.

Rates Per Quarter

Cubic Feet		*Per 100 Cubic Feet With Sewers*	*Without*
First	1,000 ..	$0.29.7	$0.27
Next	4,000 ..	.25	.22½
"	10,000 ..	.21½	.19½
"	20,000 ..	.19	.17½
"	65,000 ..	.18	.16
"	300,000 ..	.14½	.13
"	2,000,000 ..	.11	.10
"	2,000,000 ..	.09½	.08½
Excess		.08	.07

Outside city limits rates are double, except for industrial users, who pay 1-2/3rds the in-city rates.

Minimum Quarterly Charges

Meter Size (in inches)	*Charge With Sewers*	*Without*
⅝	$2.97	$2.70
¾	4.50	4.05
1	6.00	5.62
1½	10.20	9.00
2	19.80	18.00
3	30.00	27.00
4	39.00	36.00
6	54.00	49.50

Outside city limits rates are double, except for industrial users, who pay 1-2/3rds the in-city rates.

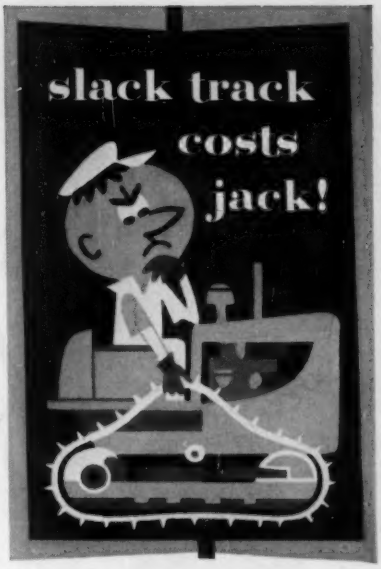
Fire Protection

Public: Public fire protection is paid for out of the city's general tax fund.
Private:
Sprinkler systems in city: 5¢ per sprinkler head per annum with a minimum of $15 for each sprinkler system. For metered systems the 5c charge is eliminated.
Sprinkler systems outside city: A flat charge of $100 per annum is made for each system. In addition, a charge of 10¢ per sprinkler head is made with a minimum of $30 for each system. For metered systems the 10¢ charge is eliminated.
Hydrants: A charge of $48 per annum is made for each private fire hydrant outside city limits.

Typical Quarterly Costs

Gallons	*Cubic Feet*	*Charge With Sewers*	*Without*
9,000	1,200	$3.47	$3.15
15,000	2,000	5.47	4.95
30,000	4,000	10.47	9.45

(Continued on page 199)



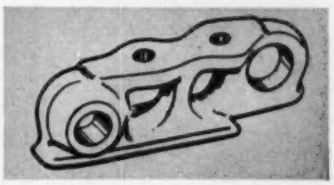
Even "the toughest track ever made" (Allis-Chalmers, of course) needs adjustment to give you the extra life that's built into it. Make this on-the-job track check.

Take a pry bar and see how far you can raise the track above one of the support rollers. More than *two inches* means it's too loose. Take up the slack, move the tractor back and forth to equalize the tension, then check again.

Regular track inspection is an easy way to make sure you get the most out of "the toughest track ever made."

WHAT **toughest**
REALLY MEANS

It's more than just talk. Take sidebars, for instance. Some track makers get by with mere *surface* hardening, which sacrifices wearing quality for easier machining. But Allis-Chalmers *deep*-hardens the forged steel, leaving a tough inner core for high impact strength. Then, *pin and bushing bores only* are annealed, and the superhard sidebar is machined to precise finish dimensions.



The moral of the story: *Stay on the right track*—"the toughest track ever made." Get original-quality parts from your Allis-Chalmers dealer.

move ahead with
ALLIS-CHALMERS
power for a growing world

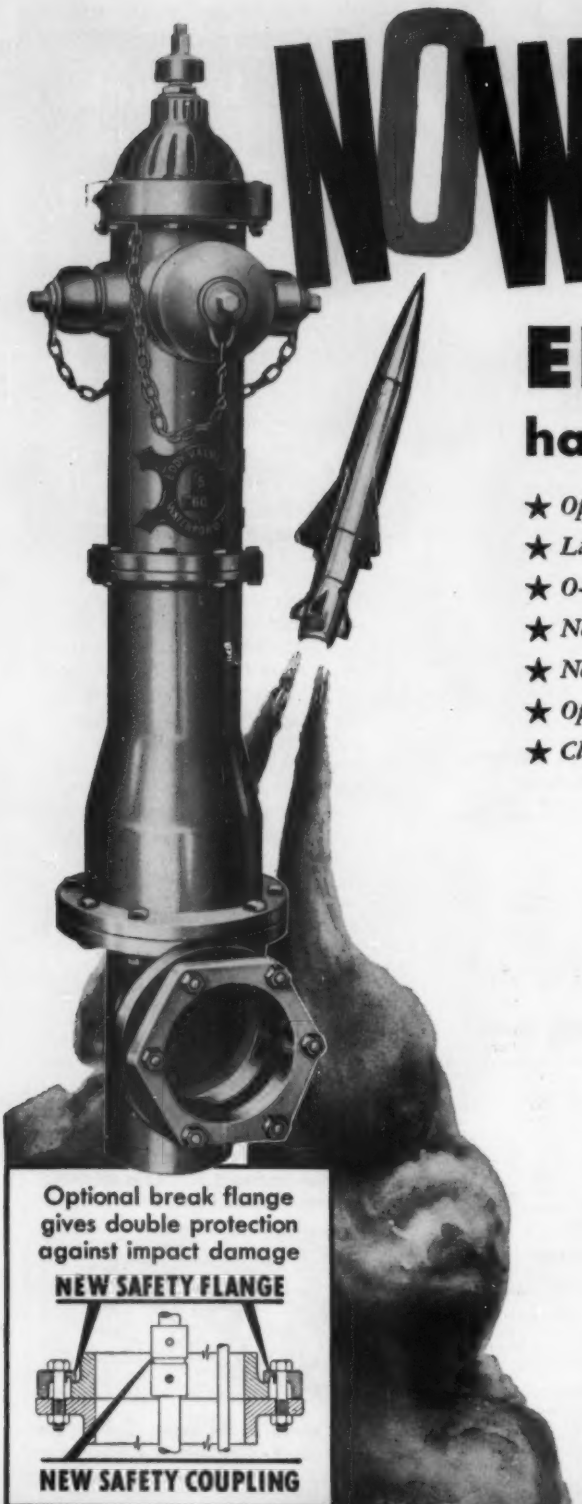
NOW!

improved... streamlined... modernized...the

EDDY Hydrant

has ALL these features...

★ *Optional ground line break flange*
★ *Large diameter barrel for increased flow*
★ *O-ring or standard packing*
★ *New self-sealing rubber ring main valve packing*
★ *No lubrication required for fast, easy opening*
★ *Opens with the pressure—for instantaneous flow*
★ *Closes against the pressure—eliminates water hammer*



Optional break flange gives double protection against impact damage

NEW SAFETY FLANGE

NEW SAFETY COUPLING

The EDDY Hydrant...improved... streamlined...modernized...retains all the basic advantages that have made these hydrants outstanding for four generations. Yet, it has important new advanced design features which provide the utmost in efficient, dependable, longlife fire protection service.

These new important advantages are provided without sacrificing interchangeability of working parts with EDDY hydrants now in service. Now, more than ever, EDDY offers maximum fire protection, economical maintenance and assurance against future obsolescence in your fire-fighting system.

Before buying or specifying hydrants, be sure you know how these advantages may benefit your community.

EDDY VALVE COMPANY
A Subsidiary of James B. Clow & Sons, Inc.

WATERFORD
NEW YORK

General Data

Population served	335,700
Miles of Mains	1,111
Services (100% Metered):	
Domestic	43,539
Commercial	10,310
Other	311

Supply—Cumberland River

Treatment—Aeration, sedimentation and coagulation with sulfate of alumina, filtration, chlorination with liquid chlorine and ammonia, carbon, lime, copper sulfate used as required. Also sodium silicofluoride is used to inhibit dental caries in pre-school children.

Plant capacity	60 mgd
Average demand	35 mgd

Remarks

1. Utility provides no part of service line.
2. City contributes $100 per lot towards cost of new main extensions. Developer pays the balance.
3. Sewer services are both operated and billed for by the Waterworks Department.
4. Burroughs Class 30 automatic billing equipment is used to expedite billing.
5. Water rates were increased 50% inside city limits and 10% outside in 1953 to give a 2-1 ratio of outside-city to in-city rates and provide for increased costs.
6. Approximately one-third of the water rate inside the city is earmarked for the sewage disposal system, including debt service on $11,000,000 sewer bonds. Approximately 10% of the water rate outside the city is so earmarked since the system's treatment plant was designed to eventually take care of outside consumers.

ROBERT L. LAWRENCE, JR.
Director
Waterworks Department
Nashville, Tennessee

NIAGARA FALLS, N. Y.

Rates Per Quarter

Cubic Feet	*Per 100 Cubic Feet*
First 20,000	$0.16½
Next 60,000	.12½
" 120,000	.09½
Excess	.07½

The above rates are subject to 3% utility tax.

Outside city limits rates are three times the above for household and industrial factory purposes, and five times the above for other than household and industrial factory purposes.

Minimum Quarterly Charges

A charge of $3.10 is made for all meter sizes within city limits, for which an allowance of 1800 cubic feet is made. For the same allowance outside the city the charges are trebled and quintupled as above.

Typical Quarterly Costs

Gallons	*Cubic Feet*		*Charge*
9,000	1,200	(Minimum)	$3.10
15,000	2,000		3.30
30,000	4,000		6.60

General Data

Population served	104,000
Miles of mains	300
Services (100% metered):	
Domestic	21,040
Commercial	300

Supply—Niagara River, west channel

Treatment—Sedimentation, alum sulphate, rapid sand filters, pretreatment, chlorine dioxide, fluoridation, and lime for pH control

Plant capacity	64 mgd
Average demand	55 mgd

Remarks

1. Utility provides service line to full length.
2. Utility provides the cost of new mains.
3. The Water Division of the Department of Utilities does not operate sewer services, but it bills for them.
4. Billing equipment used by the department is the Underwood Billing Machine.
5. Water rates were increased by one third in October 1955. Water use was not affected and further adjustment is not needed.
6. There is no charge for separate fire service, but consumer must post $1500 bond to insure water will not be used for some other purpose.

JOHN J. BURNETT
Superintendent of Water
Department of Utilities—Water Division
Niagara Falls, N. Y.

PONTIAC, MICH.

Rates Per Quarter

Cubic Feet	*Per 100 Cubic Feet*
First 100,000	$0.08
Next 900,000	.07
Excess	.06

Outside city rates are doubled. Utility presently discourages applications for city water from outside users.

Minimum Quarterly Charges

Meter Size (in inches)	*Charge*
⅝	$ 3.30
1	4.50
1¼	5.85
1½	6.90
2	9.90
3	17.55
4	26.85
6	51.80
8	81.75
10	106.80

Typical Quarterly Costs

Gallons	*Cubic Feet*		*Charge*
9,000	1,200	(Min.)	$3.30
15,000	2,000	"	3.30
30,000	4,000	"	3.30

General Data

Population served	84,000
Miles of mains	220

(Continued on page 201)

FREE *Sample Offer!*

HI-VIZ®

FLUORESCENT SAFETY PAINT

Every municipal department has a dozen important uses for high visibility safety markings! HI-VIZ Fluorescent Oil Colors make sanitary maintenance trucks, waste containers, alarm boxes, fire hydrants warning barricades, street signs and emergency vehicles 4 times brighter than usual . . . protect lives and property as well as reducing accident claims against the city. HI-VIZ Colors demand extra attention for possible accident sources. Available for brush and roller coating use in spray equipment, as well as aerosol Jet-Spray cans.

WRITE TODAY!

on letterhead for FREE ¼ pt. sample and brushing color brochure illustrated in HI-VIZ Fluorescent Colors.

Distributor inquiries invited

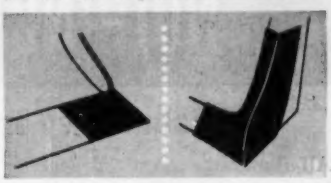
LAWTER CHEMICALS, INC.
Dept. AC 3552 Touhy Avenue, Chicago 45, Illinois
CHICAGO • South Kearny, N.J. • San Leandro, Calif.

Don't kid yourself! An extra half inch of wear on the cutting edge of your dirt-mover can cost you plenty! Wear that chews into the moldboard weakens it—especially around bolt holes. Then you may have to rebuild or even replace the whole works!

Renew or replace cutting edges and bits before moldboard wear starts. You'll be money ahead on repairs and 'way out front in dirt-moving efficiency.

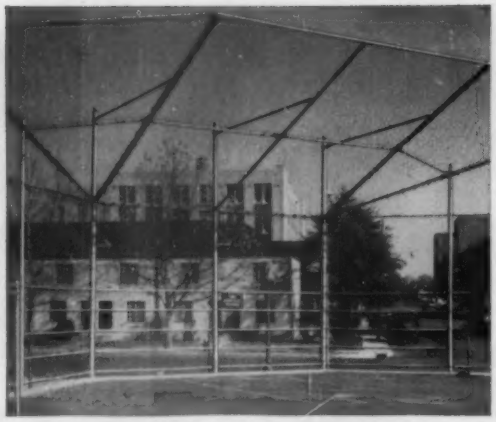
ONLY THE BEST IS A BARGAIN!

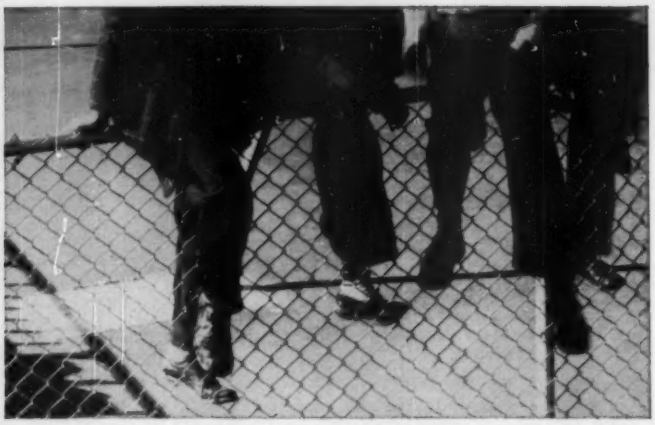
Speaking of moving dirt, Allis-Chalmers really has the edge! Take dozers, for instance. Cutting edges and end bits are made of finest alloy steel, forged and electronically heat-treated in a process that deep-hardens working faces for extra-long wear, toughens the core to resist impact. For rock-dozing or worse, Allis-Chalmers makes *heavy-duty* edges, end bits and wrap-around end bits.



The man from your Allis-Chalmers dealer knows all about moldboards—for a new machine or reconditioning one you own—and the edges he recommends are *right*. Whatever you need, get original-quality Allis-Chalmers parts—*made for the machine*, best for the job.

move ahead with ALLIS-CHALMERS
power for a growing world



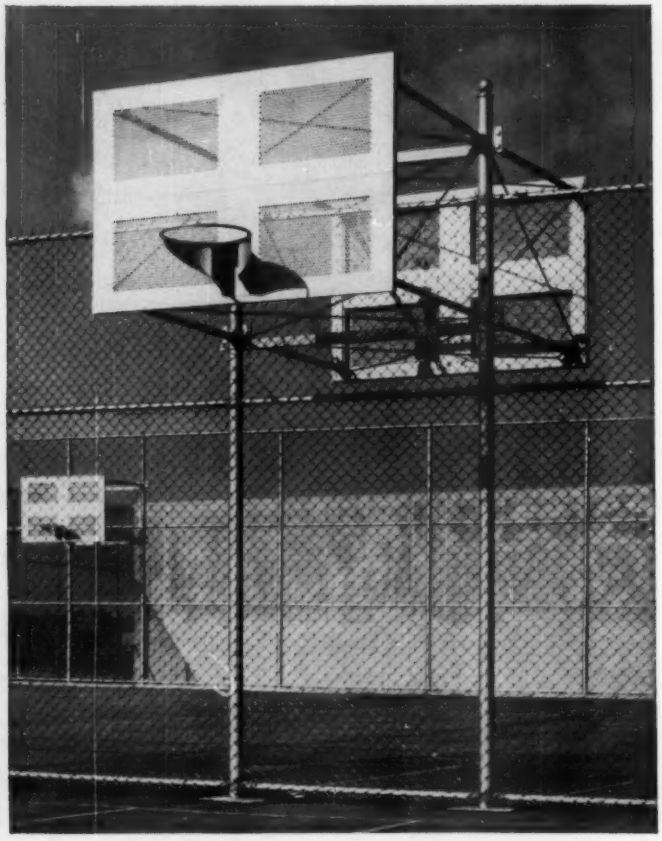


RESULTS GAINED FROM ALUMINUM:

appearance?
EXCELLENT!

strength?
UNIMPAIRED!

upkeep cost?
NOTHING!



Chain Link Fencing of Alcoa Aluminum Defies Deterioration

All-aluminum chain link fencing for community facilities such as parks, schools and athletic fields stretches the taxpayer's dollar while fully meeting all security requirements. Chain link fencing of Alcoa® Aluminum lasts indefinitely and will save the rising cost of periodic maintenance.

Alcoa Aluminum alloys are highly corrosion resistant and provide extra strength to defy abuse and absorb impact. Lightweight aluminum is easily relocated; reclaimed sections blend in with the new. Chain link fencing of Alcoa Aluminum erected over 30 years ago still stands today, unimpaired in strength or appearance.

Check these other advantages you get with Alcoa Aluminum:

High Strength—Average tensile strength of Alcoa's new alloy is 57,500 psi.

Easy Erection—Light weight means less labor.

Readily Available—Reliable manufacturers and erectors in 48 states. Contact your nearest Alcoa sales office.

For your copy of 12-page illustrated booklet and a summary of recently bid prices on 4-ft-high and 6-ft-high all-aluminum fencing, write to Aluminum Company of America, 2058 L Alcoa Building, Pittsburgh 19, Pa.

ALCOA ALUMINUM

Your Guide to the Best in Aluminum Value

For Exciting Drama Watch "Alcoa Theatre," Alternate Mondays, NBC-TV, and "Alcoa Presents," Every Tuesday, ABC-TV

Services	*Number*	*% Metered*
Domestic	19,700	93.9
Other	200	100

Supply—Wells
Treatment—Chlorine, metaphosphate
Plant capacity ..... 26 mgd
Average demand ..... 12 mgd

Remarks

1. Utility provides service line to property only.
2. Utility provides mains in old established subdivisions at a cost of $2.25 per front foot. In new subdivisions developer pays all.
3. Both water and sewer services are operated and billed for by the same department.
4. Burroughs automatic equipment is used in billing.
5. Water rates were increased in 1952 by 30%. Water use was not affected. Adjustment is now needed.

JOSEPH W. GABLE
Water Superintendent
Water Department
Pontiac, Michigan

TOLEDO, OHIO

Rates Per Month

Cubic Feet	*Per 100 Cubic Feet*
First 10,000	$0.13
Next 150,000	.126
" 1,000,000	.099
Excess	.072

Outside city limits, rates are 50% additional.

Minimum Monthly Charges

Meter Size (in inches)	*Allowance (cubic feet)*	*Charge*
⅝	1,000	$1.30
¾	1,500	1.95
1	2,500	3.25
1½ and over	6,000	7.80

Fire Protection

Inside City
Service lines: 50c per inch per month
Hydrants: 50c per hydrant per month
Outside City
Service lines: 75c per inch per month
Hydrants: 75c per hydrant per month

Typical Monthly Costs

Gallons	*Cubic Feet*	*Charge*
3,000	400	(Min.) $1.30
5,000	667	1.30
10,000	1,333	1.73

General Data

Population served	400,000
Miles of mains	760
Services (100% *metered*):	
Domestic	100,272
Commercial	816

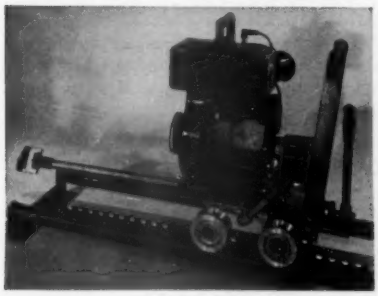
Supply—Lake Erie
Treatment—Coagulation, lime soda softening, rapid sand filtration, chlorination and fluoridation.
Plant capacity .....120 mgd
Average demand .....64.5 mgd

Remarks

1. Utility provides service line to property only.
2. Utility provides 50% of the cost of new main extensions.
3. The Division of Water bills for sewer services, but does not operate them.
4. A National Utility Billing Machine, Class #2000, is used for automatic billing.
5. Water rates were decreased by 10% in 1954. Water use was not affected and further adjustment is not needed at present.

SOL J. WITTENBERG
Commissioner of Water
Toledo Division of Water
Toledo, Ohio

EBMI
Underground Boring Machine
New! Improved!



Model 70

- **BORES**—with no surface break
- **BORES**—up to 250 feet in length
- **BORES**—up to six inches diameter
- **BORES**—so drill stem of pipe of conduit stays
- **BORES**—1,000 feet on 1 Gal. of gas
- **REAMS**—up to 12 inches diameter

Write immediately for information.

EARTHWORM BORING MACHINE, INC.
P. O. Box 1100
Santa Monica, California

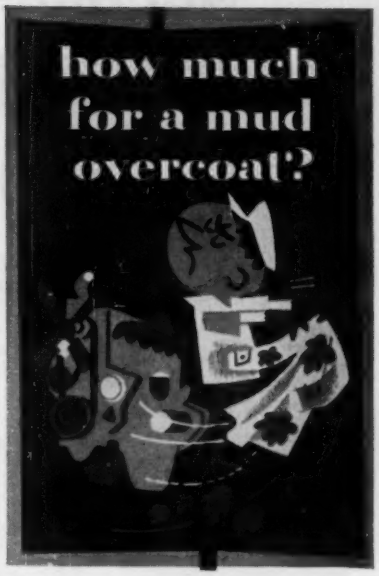
Pocket Penetrometer

Thousands in use for strength classifications of cohesive soils on field exploration or construction sites and in preliminary laboratory studies.

Direct Reading Indicator maintains the Reading until reset.

SOILTEST Incorporated — WRITE FOR COMPLETE CATALOG

4711 W. NORTH AVENUE • CHICAGO 39, ILLINOIS

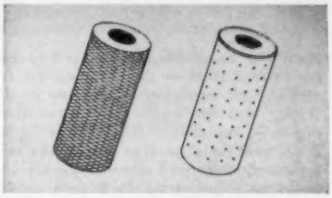


A thick mud overcoat on your tractor engine could cost you more than mink! Mud acts like insulation, impairs cooling of exposed surfaces—and you may be heading for an expensive overhaul. In any case, overheating steals power, spoils lube oil and cooks the life out of engines.

Hose the day's mud off. Clear away dirt or brush—especially around the engine and radiator. This not only helps cooling, it may also uncover trouble before it starts costing you money!

KEEP IT CLEAN INSIDE, TOO!

Efficient filter protection keeps Allis-Chalmers engines clean *inside*. Large fuel filters, full-flow oil filters and oil bath air cleaner with pre-cleaner are on guard against all kinds of sneaky, wear-causing dirt particles you might never see.



Help your engine live a long, healthy life. Service filters regularly and replace elements at recommended intervals. The service expert from your Allis-Chalmers dealer knows best replacement periods for any conditions. See him for genuine Allis-Chalmers replacement filters—*made for the machine*, best for the job.

move ahead with ALLIS-CHALMERS
power for a growing world

Not much wider than a yardstick . . .

Here's a companion-model utility trencher, mounted on rubber tires — the Parsons 88 Trenchmobile®. It makes self-powered moves over city streets, highways, through traffic at travel speeds up to 12.6 m.p.h. — maintains fast "work-and-run" schedules. Trenchmobile digs 8 or 16 inches wide, at depths to 5 feet. Ladder and wheel-type Trenchliners are available for digging up to 6 feet wide, 19 feet deep.

Parsons 77 Trenchliner fits city clearances

. . . It's only 3 feet-10 inches wide. Working height, with boom in digging position, is just 5 feet-8 inches. What's more, this little Parsons 77 Trenchliner only weighs about 6700 pounds for convenient trailer-transport from job to job. Small in size, but big in capacity, the 77 has a work range that will surprise you. For instance . . .

Digs up to 5 feet deep

It produces from 4.4 inches to 21 lineal feet of trench per minute, in 32 hi-lo digging speed selections. You get trench widths from 6 to 18 inches, *and maximum digging depth of 5 feet!* The tiny 77 is heavy-duty in every respect. It has positive down-crowd on telescopic ladder boom. Self cleaning, cast-steel buckets are equipped with Parsons "Tap-In" teeth. Shiftable spoil conveyor is instantly reversible for controlled discharge. Compact and maneuverable, the 77 turns within its own length — each crawler is independently driven, independently braked. Better check what this small utility 77 Trenchliner can do on service connections, small mains, underground cables, lighting systems, curb, foundation footings. Ask Parsons distributor for demonstration, or write to us today.

Mail today to: PARSONS COMPANY, Newton, Iowa

Send literature on: ☐ *77 Trenchliner* ☐ *88 Trenchmobile*

NAME .....

TITLE .....

COMPANY .....

DIVISION .....

STREET .....

CITY, STATE .....

P916AC

PARSONS® TRENCHLINER® A division of Koehring Company

City Taxes Outsiders For Sewer, Water Service

While Traverse City, Mich. is a good neighbor to suburbanites it has no intention of subsidizing them.

According to City Manager N. G. Damoose, city sewer and water services have been provided homeowners outside the city, but to get sewer and water service nonresidents must contract to pay an amount equal to city property taxes, in addition to fees for water and sewer paid by residents, plus the cost of running the pipes out to each user. The contract to pay city property taxes runs with the property.

Since these nonresidents are paying full city taxes and receiving only partial city service, city officials believe that outsiders will support proposals to annex their areas.

City Manager Damoose reports that requests from out-of-city residents are coming in by telephone. One typical request from a doctor said, "My septic tank has gone to h - - ! I have arranged with two neighbors for an easement to cross their property. How soon can I be connected to your sewer?"

Miami Saved $100,000 on Crossing Guards

In 1957 Miami was paying $100,000 a year for school crossing guards who worked just before and just after school hours at 88 intersections. Then, at a meeting of the International Association of Chiefs of Police Traffic Committee, we learned from Police Chief W. F. Johnson of Denver that he used push-button automatic traffic signals in place of guards.

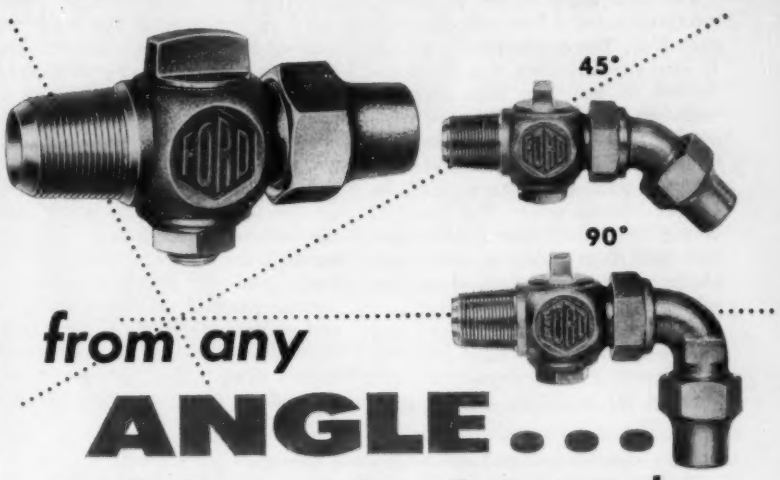
Two years later, Miami has dropped all school crossing guards and uses manually operated push-button "Walk-Don't Walk" signal lights. Everybody likes them, including the school children.

The pedestrian light is synchronized with the nearest intersection light so that vehicular traffic flows smoothly. It merely sets into motion the machinery that will permit a pedestrian to cross. As an added safety factor, the "Walk" phase does not flash on until a few seconds after the red light has appeared for vehicular traffic. In similar fashion, the green light for motorists does not reappear until a few seconds after the "Don't Walk" phase reappears for the pedestrians. The delay between the two phases protects children from the motorist trying to beat the red light or trying to jump the gun on the green light.

First, the light is available 24 hours a day. Second, when not actuated by a pedestrian, the light remains a constant "green" for motorists. Third, the elimination of the old 15-mile-per-hour school zones made motorists feel that they too were benefiting by the new program. And fourth, the lights help to teach children self-reliance.

With the elimination of adult guards, we also disposed of the problems of filling vacancies, furnishing uniforms, and providing training. That we have reduced our budget by over $100,000 yearly has not gone unnoticed.

J. A. YOUELL
Assistant Chief of Police



from any ANGLE . . .

Ford Corporation Stops make easier installation and service

They are heavy and substantial, made of the finest waterworks bronze with accurate and carefully machined threads. Broad flats on the keys are easily turned with a wrench. Outlets are made for flare type connection to copper tubing.

F-600 CORPORATION STOPS—AWWA standard threads at inlet. Available in sizes ⅝", ⅝" x ¾", ¾", and 1".

F-700 CORPORATION STOPS — American National pipe threads at inlet. Available in sizes ¾" and 1".

All Ford Corporation Stops are shipped in special cartons to protect against damage and dirt.

A real convenience in handling, storing and taking inventory.

Prices will be gladly quoted. Include model number, sizes and quantities.

THE FORD METER BOX COMPANY, INC.
Wabash, Indiana

FOR BETTER WATER SERVICES

FORD

Marysville Updates Its Streets

(Continued from page 9)

in the binder of not more than 6. This material was thoroughly mixed, compacted to 95% of maximum density determined by the Proctor test, and finished to proper line and grade. Next came the MC-1 prime followed by a seal coat of RC-4 bituminous material covered with an application of mill-run chat. We placed the second seal coat, using the same type bituminous material and chat, one year later or during the second season.

For the higher-type pavement, we constructed a five-inch crushed-rock base. The crushed rock, graded to local specifications, was also compacted to not less than 95% of maximum density. This we also primed with an MC-1 and surfaced with a two-inch hot plant-mix asphaltic concrete placed with a Barber-Greene paver. The material was mixed in a Cedar Rapids central mix plant using an AC-5 asphalt cement and trucked to the job site.

A Galion tandem roller and Tampo rubber-tired roller followed the paver. Final compaction was handled by a 12-ton Galion self-propelled Roll-O-Matic tandem roller.

Hall Brothers Construction Co. of Marysville held the contract for the entire program.

Cost Shares

On streets surfaced for the first time, the property owner pays the entire cost of the base and surface course adjoining the individual property. On streets having had some prior bituminous application, the city pays for excavation plus one-third of the cost of the base and surface course. In all cases the city picks up the cost of alley and street intersections.

The property owners have the option of paying their assessments within 30 days from the date of assessment notice or having it placed on the tax bill. In the latter case, the necessary funds are obtained through the sale of bonds. We issued three-year bonds to cover the penetration and seal type surfacing and seven-year bonds for the more expensive hot-mix asphaltic-concrete work. The interest rate charged to the people placing the assessment on the tax bill is 4%. Interest on the bonds is 2¾%.

The program consisted of 54 blocks of penetration and seal type surfacing for which the owner of a 44-foot lot paid $29.72. This represents two-thirds of the total cost per lot; the city paid the balance.

Fifty-six blocks received the higher-type asphaltic-concrete surfacing. The assessment per 44-foot lot in this case amounted to $116.59, which again represents only two-thirds of the total cost.

The property owner paid the total cost of curb and gutter adjoining his property amounting to $1.72 per lineal foot, with the city assuming the cost for curb and gutter across alleys and in the intersections.

Streets' Need Greatest

The most expensive service provided by municipal governments is the construction and maintenance of streets, a U. S. Bureau of Census study reports. The next most costly function is sanitation, including sewage disposal, street cleaning and refuse collection.

STILL voting with paper ballots and ballot boxes?

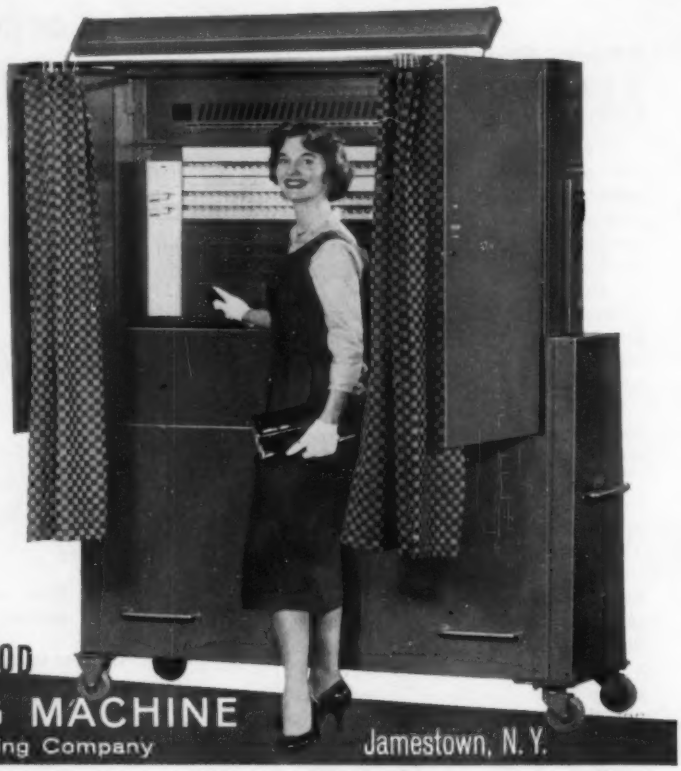
That WAS the best way SIXTY YEARS AGO . . .

but TODAY . . .

AUTOMATIC VOTING MACHINES

offer the utmost in accuracy, speed, efficiency and economy.

Available for Service Clubs or other interested gatherings by 60 day reservation—a new 18 minute 16 mm color film illustrating potential benefits of Automatic Voting Machines.



PRODUCTS FOR THE PUBLIC GOOD

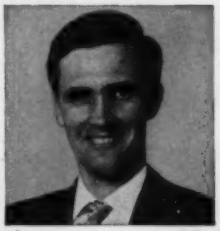
AUTOMATIC VOTING MACHINE

division of Rockwell Manufacturing Company

Jamestown, N. Y.

Lightweight, easy-handling aluminum signs go up fast. While R. J. Colpitts looks on, foreman Omer Lane easily installs this sign in only 10 minutes. Alhambra's signs are fabricated from Kaiser Aluminum blanks with reflectorized sheeting by the Mask-Off Company of Monrovia, California.

"For our money, only cost-saving aluminum signs will do!"



... says R. J. Colpitts, Traffic Engineer, Alhambra, California

"We like aluminum traffic control signs because we are able to get the type of sign we want—with both initial and long range savings over other materials," reports R. J. Colpitts, Traffic Engineer, Alhambra, California.

"And we know we'll save plenty on maintenance and replacement costs, as well. With rustproof aluminum, the oxidation problem is reduced to an absolute minimum. There's no need for us to protect the edges and back surfaces of our signs.

"What's more, because aluminum signs are so easy to work with, they give our sign shop greater flexibility. We can tailor-make our sign program to suit our particular needs with little added equipment.

"No doubt about it. With us, it's aluminum traffic control signs all the way!"

KAISER ALUMINUM

THE BRIGHT STAR OF METALS

Let us make a bid. For expert service on money-saving aluminum signs, call the manufacturer, fabricator or Kaiser Aluminum sign blank jobber near you.

Berkeley, Calif.
Hawkins-Hawkins Co., Inc.
Charlotte, Mich.
Paul H. Callender Co.
Chicago, Ill.
Bell & Gustus, Inc.
Federal Sign & Signal Corp.
Cleveland, Ohio
Osco Steel Co.
U. S. Steel Supply
Clinton, Mass.
Standard Sign & Signal Co.
Dallas, Tex.
All Quality Sign & Mfg. Co.
Elmira Heights, N. Y.
Eastern Metals of Elmira, Inc.
Evanston, Ill.
Northwest Screenprint Co.
Grand Prairie, Tex.
Sargent-Sowell, Inc.
Houston, Tex.
Western Sign & Supply Co.
Indianapolis, Ind.
Midwest Fire & Safety Equipment Co., Inc.
Lancaster, Pa.
John I. Nissly Co.
Little Rock, Ark.
Moody Equipment & Supply Co.
Marion, Ind.
Jim Newey and Assoc.
Metairie, La.
W & A Engineers
Miami, Fla.
Biscayne Fire Equipment Co.
Minneapolis, Minn.
Lyle Signs, Inc.
Monrovia, Calif.
Mask-Off Co.
North Tonawanda, N. Y.
Northern Electric Supply Co.
Overland, Mo.
Wiegand Mfg. Co.
Peoria, Ill.
James P. Flynn Co.
Petaluma, Calif.
Kresky Signs, Inc.
Philadelphia, Pa.
Advertisers Service Co.
Rocky River, Ohio
Bowman Western Stamping Co.
Sacramento, Calif.
The Dosch Co.
Spencer, Ind.
Stello Products
St. Louis, Mo.
Parco Supplies
St. Paul, Minn.
Gopher Stamp Co.
Tacoma, Wash.
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Wichita, Kan.
Miro-Flex, Inc.
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Send now for free brochure. Gives cost-saving facts and availabilities on traffic control signs made of Kaiser Aluminum. Mail coupon today.

Kaiser Aluminum & Chemical Sales, Inc.
Dept. TS-17, 1924 Broadway
Oakland 12, California

☐ Please send me your free aluminum sign brochure

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NAME_____

ADDRESS_____

CITY_____ ZONE____ STATE_____

Greenville, Miss. Cuts Costs . . . Improves Refuse Collection with DUMPMASTER

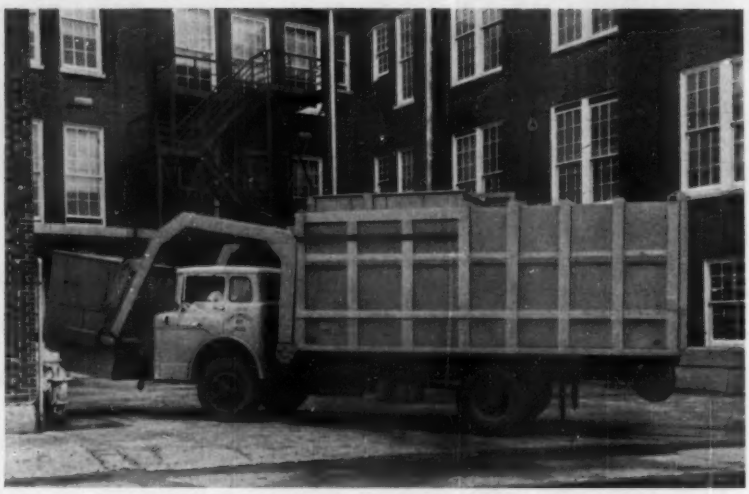
Officials, Merchants Enthusiastic Over New Type Service

After five months of operation, Greenville, Mississippi officials, merchants and sanitation department employees believe their DEMPSTER DUMPMASTER system is the answer to low-cost, sanitary refuse collection.

This prosperous, progressive city on the banks of the Mississippi River installed one truck-mounted Dumpmaster and 39 containers in sizes ranging from three through six cubic yards in February of 1959. Five months later, City Engineer John Teunisson who, together with a far-sighted city council instituted the installation, reports that the new system has exceeded his highest expectations for economy and efficiency.

Members of the Sanitation Department who have closely supervised operation of the new equipment are particularly pleased with the Dumpmaster's ability to handle big capacity containerized refuse, as well as hand-loaded residential pickup routes. It is pointed out that this flexibility enables them to keep the equipment busy, thereby saving the taxpayers money.

John Teunisson, veteran city official, likes Dumpmaster economy.

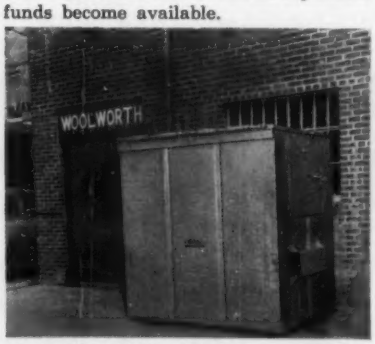


Dumpmaster picks up 6 cu. yd. container behind elementary school.

Schools and Downtown Areas Containerized Residential Routes Served By Dumpmaster

At present, schools and the downtown business district, where large volumes of refuse accumulate, are served by big capacity containers, with all 39 locations being given daily service. Additionally, several manual loading routes in residential areas are served by using the Dumpmaster as a conventional packer truck.

City Engineer Teunisson estimates that the school containers will pay for themselves in less than one year as a result of time savings with the new system. The Dumpmaster has made possible a $7,000 reduction in the Sanitation Department Budget. The size of these savings and opportunities for further improvement have led Greenville to set up a goal of over 100 containers as soon as expansion funds become available.



Typical installation behind a store in the downtown business district of Greenville.

Tax-Fee Plan Covers Expenses

Greenville's residential and school refuse collection is tax supported, but commercial refuse carries a charge to the merchant based on the time necessary to make a pickup with a conventional packer truck and its crew. The monthly charges are based on the number of pickups, times the number of minutes required, times $2.75 per minute. These proceeds are applied to pay for the container, the Dumpmaster and the operator's salary. Because of the high speed collection, the city saves enough over manual operation to offer free service to any merchant who purchases his own container.

Dumpmaster dumps huge load at the efficiently operated landfill.

DEMPSTER BROTHERS
Inc.
Knoxville 17, Tenn., Dept. AC-11

Longer the Reach—Shorter the Cost

By **D. W. WARREN, Jr.***

A community hit by even one hurricane is usually stricken with tragedy and costly reconstruction. It is hard to believe that so much as a minor blessing could result.

But the town of Brookline, Mass., was struck twice in a single year and badly mauled. Now, in retrospect, one of few bright spots remaining in an otherwise dismal memory, is the emergency acquisition at the time of a single piece of equipment, which has saved as much as $200 in overhead for every week of its use.

Covering six square miles, Brookline has 90 miles of streets that were lined by 16,000 shade trees. The two storms completely destroyed 750 of these and damaged 70% of those remaining.

Confronted with a formidable clean-up and tree-trimming problem, town officials studied emergency purchase of equipment that would ease and speed the job. They inspected and bought a Skyworker Model 4033 hydraulically operated aerial lift, made by Emhart Manufacturing Co. of Hartford, Conn. The lift, purchased for a specific use, has proved to be a versatile performer. Records show that it also is a consistent cost cutter.

Fielder's Reach

The unit carries workers to any desired working height up to 41 feet. Booms can be rotated 360 degrees to provide wide lateral reach. Stability at lateral extension is provided by outriggers and a leveling mechanism.

The upper boom is covered with laminated, resin-impregnated glass fiber to protect workers aloft from electric shock. Work platforms also are of glass fiber construction with high dielectric strength.

Electrical and air-power outlets are provided in dual work platforms for all types of high work.

As a direct result of these features, the Skyworker was employed straight through the winter following the storms, and its stability, safety and efficiency under icy, slippery, and wet conditions were

* Mr. Warren is the Superintendent of Parks and Forestry in Brookline, Mass.

This versatile aerial lift was originally purchased to trim storm-lashed trees; it now performs many other emergency and routine operations.

Comparative Costs

Aerial Crew	*Cost per Day*
Truck with all equipment attached: generator, compressor, chipping machine and enclosed self-dumping chip hopper	$ 7.69*
1 truck operator	14.23
2 tree climbers	28.60
1 ground man	13.23
Total (four men plus machine depreciation)	$63.75
Conventional Crew	
Forestry line truck with separate generators and chipping unit, and with open chip bin mounted on truck body	$ 3.31*
1 working foreman	15.72
1 truck operator	14.23
4 tree climbers	57.20
1 ground man	13.23
Total (seven men plus machine depreciation)	$103.69

* Depreciation cost only—Other operating costs equal.

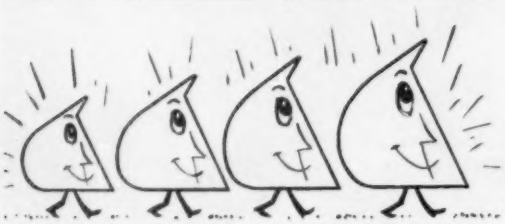
When is a 2-yd Loader *Not a 2-yd Loader?*

. . . Simply when it operates over or under carrying capacity. The right combination to peak production and longer loader life is the right size bucket on the right size loader.

That's why Allis-Chalmers offers a wide selection of buckets for each of the TL-14, TL-16 and TL-20 TRACTOLOADERS. You choose the size that's just right for the weight of materials you handle and your job operating conditions.

Some buckets are too big . . . others too small

Using a bucket that's too big for the material you handle can cause excessive repairs and downtime . . . using one that's too small costs you money because you're not getting all you can out of your loader. That's why you should select your bucket/loader by carry capacity. For example, with the TL-20 which has a 9,000-lb carry capacity, you could use a 3-yd bucket in materials that weigh 3,000 lb. You could use a 5-yd bucket with materials that weigh 1,800 lb.



Fit the bucket to the job

Whether you're working good, level terrain, swampy ground or hilly country, there's a right loader and bucket combination for your material needs . . . your operating conditions. Choose from 17 bucket/loader combinations.

BOTH *loader and bucket* have to be tough

. . . or the most efficient selecting in the world won't help! That's why Allis-Chalmers offers such outstanding features as extra-high spill guards . . . double-bottom bucket and replaceable wear plates — why TRACTOLOADER axles are pin-connected directly to the frame with 2-inch-diameter steel pins instead of the usual U-bolt method. There is no rolling or shifting under load — no bolts to work loose, no mounting plates to warp out of shape.

Your Allis-Chalmers construction machinery dealer can assure you longer loader life . . . more consistent production year after year than anyone else. His products are by-products of experience — backed by first-line quality parts and good service.

ALLIS-CHALMERS, CONSTRUCTION MACHINERY DIVISION, MILWAUKEE 1, WISCONSIN

TL-14 — 6 buckets
from 1 to 3 cu yd • 86 hp gasoline
83 hp diesel • 14,850 lb

TL-16 — 5 buckets
from 1½ to 4 cu yd • 109 hp gasoline
104 hp diesel • 18,000 lb

TL-20 — 6 buckets
from 2¼ to 5 cu yd
130 hp diesel • 23,250 lb

move ahead with ALLIS-CHALMERS

...power for a growing world

principal factors in significant savings in time and money.

Following Brookline's winter-long tree-trimming job, the lift was given another big assignment clearing the way for a new street-lighting system to replace old-fashioned 10-foot-high gas lamps. Trees had to be trimmed down in a 75-degree cone from new 22-foot light stanchions to give proper illumination distribution.

Trimming was done on the ends of branches with only the work platforms over vehicle lanes, allowing traffic to continue unhampered.

The lift has saved half the time formerly required to scout for Dutch Elm disease, then to inspect and tag diseased trees. After blight is verified from tree samples, treatment is handled by Skyworker crews.

Routine and emergency uses that prove the lift's versatility are:

1. erecting Christmas tree decorations,

2. stringing signs and banners,

3. rescuing cats from trees (formerly a fire department chore).

Cost Cutter

Costs of tree trimming with conventional tree crews and with aerial lift crews have been compared. Savings are illustrated in the tabulations on page 207.

By saving Brookline up to $200 per week in overhead costs, the Model 4033 amortized itself in less than two years of safe, trouble-free operation. Brookliners have found this lift to be of inestimable value. It is without doubt the most important mechanical purchase the writer has made in ten years as superintendent.

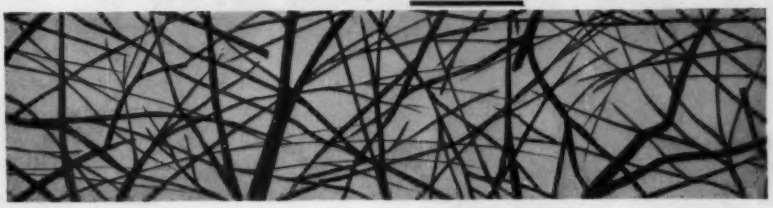
More Litter Cans For Cleaner Streets

New York City stepped up its four-year-old clean city campaign by adding 14,587 new litter cans to the almost 18,000 already in use. Mayor Robert Wagner and Sanitation Commissioner Paul Screvane mentioned the new baskets at a recent luncheon of the Citizens' Committee to Keep New York City Clean.

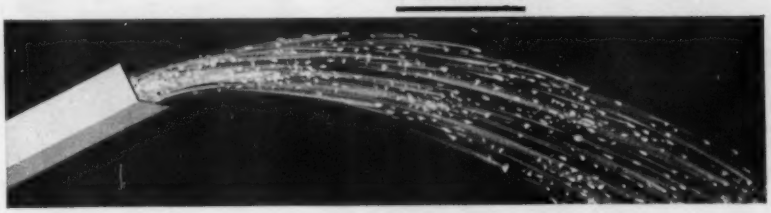
A huge litter basket located in the west waiting room of Grand Central Terminal is emblematic of this year's clean-up drive. The new slogan: "Cast Your Ballot Here for a Cleaner New York" is lettered on every litter basket.

IT'S AN ECONOMIC FACT

You can chip more brush

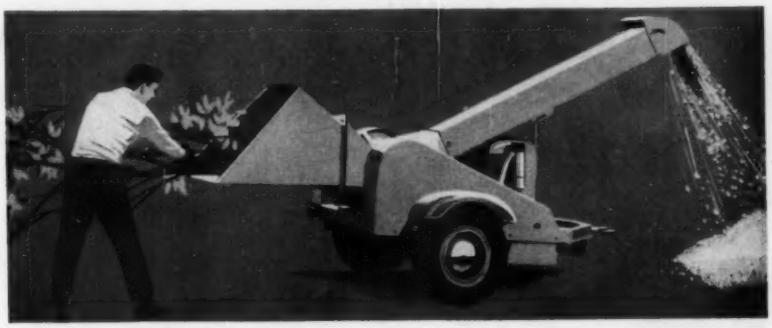


faster



at less cost

with an ASPLUNDH CHIPPER

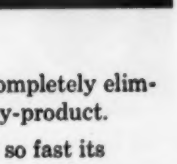


than with any other machine on the market today!

Asplundh Chippers can cut your hauling cost 75%, completely eliminate brush burning, and provide a useful, valuable by-product.

So ravenous is its appetite, so powerful its motor, and so fast its chipping action, it is equalled by no other. Yet it is so simple in design that maintenance is reduced to an absolute minimum.

Write *today* for full details. Better—ask for a prompt demonstration, without the slightest obligation.



ASPLUNDH CHIPPER COMPANY
505 York Road, Jenkintown, Pa.
By Actual Test the Fastest Chipper Made

"Versatile Burroughs Accounting Machines speed billing, give us current, correct balances and controls,"

says William G. Rohrer, Mayor, Haddon Township, New Jersey

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ZONING AND PLANNING NOTES

Edited by NORMAN WILLIAMS, Jr.

Churches in Residence Districts—Exclusion Upheld

OREGON. *Milwaukee Company of Jehovah's Witnesses* v. *Mullen*, 330 *Pacific* (2d) 5 (Supreme (highest) Court, September 17, 1958).

In this case a group of Jehovah's Witnesses sought to build a church on a 10,000-square-foot tract in an area zoned for single-family dwellings, where the local zoning ordinance permitted churches only under special permits. The application was turned down because of anticipated traffic hazards, noise and fumes, lights at night, and the possible deterioration of the value of property.

In the opinion the Court held that there was no real evidence of alleged discrimination against Jehovah's Witnesses in this case. The opinion then contained an excellent summary of the background of most modern zoning ordinances.

> "The foregoing conclusions recognizing the impact of changing conditions upon the application of zoning ordinances and the need for flexibility require that we give close heed to the particular and controlling circumstances present in each earlier case cited and relied upon by the appellant. It does not follow that conditions which impelled and justified certain conclusions respecting the allowance of applications five, ten, fifteen or more years ago, would result in the same holdings, if made today, concerning the same locations in the light of currently changed conditions. This is especially true in the earlier cases where and when traffic conditions, traffic congestion and its incident dangers and annoyances were dispatched as having no validity as a reason for denying applying churches the right to build in residential areas. Such are the impacts resulting from our rapidly changing economy, community concepts, increasing populations. All of these newer conditions are intensified, in large measure, by a drift of people from rural to urban communities, with the migrations of great numbers from one established geographical area to others far distant, leaving some towns and villages much smaller and enlarging the size of others, and leaving all with new governmental and social problems to meet, particularly in the area of transportation. Beginning with 1940, Oregon has in a lesser, yet very noticeable way, felt the effect of such residential changes by migrations, as well as by normal population growth. The federal census shows a population growth in the State of Oregon of approximately 40% from 1940 to 1950, whereas the increase in the City of Milwaukee for the same period was 180%. This knowledge gives emphasis to the oft-repeated judicial observation, that every zoning case must be evaluated in terms of the particular circumstances then and there attendant."

The Court then pointed out that, since it could not be seriously argued that a church could adversely affect the public health and morals, the question here turned upon the question as to whether the general welfare was served. The various grounds for the exclusion were reviewed and found to be proper under the police power.

> "From his statements we gather that among the persuasive factors dictating the Council's denial were traffic hazards, later referred to as traffic congestion, conditions of automobile noises, fumes and lights, particularly resulting from the parking and starting of cars at nighttime in the range of nearby residences. The witness Klein also stated that the Council took into consideration the effect on the values of the property in the immediate neighborhood, but we read this depreciation as an incident to increased traffic hazards and congestion and not because of the mere presence of a church in the zoned area."

> " . . . Confining ourselves to the known reasons as expressed by Mr. Klein for the denial of the application, that is, traffic congestion hazard, and the discomforts arising from noise fumes and lights, we find that each falls within the purview of the standards established by Section 3 of the ordinance, supra, and each one is a subject bearing a substantial relation to or reasonably necessary for the protection of the public health, safety, morals and general welfare to warrant regulation through the exercise of the police power. All have found judicial approval in 'church' zoning cases as conditions having a substantial relation to the public welfare."

The text above indicates a welcome realization—welcome, because so rare in zoning opinions—that an alleged effect on property values is a purely derivative factor in such situations.

On the question of traffic congestion, the Court noted the large increase in motor vehicles in Oregon in recent years, and discussed when traffic congestion could properly be made the basis of zoning restrictions.

> "The incidents of traffic congestion include, among other things, noise, fumes, the intrusion of automobile lights, the blocking of private driveways by parked cars, and delays in normal travel for those using the highways. But most important are the increased dangers of injury to persons and property. We do not mean to infer that the church-going public is less diligent than others in their respect for the traffic laws. However, even the worthy and cautious persons of that class and their children are too often the victims of the careless."

> "The test of whether or not the building of a church in a given zone will produce traffic congestion or augment existing traffic conditions to a point of hazard cannot be made solely in terms of what a given number of church members might produce with their probable use of a certain number of automobiles. If a church is, perchance, in an area where few people live or travel, then it might be relatively easy for a zoning board to determine, in the absence of other circumstances, that the building of a place of worshp at such a given site, within the restricted zone, would not create traffic problems. If so, it would be unreasonable to deny such a religious organization an opportunity to erect its building at that point. On the other hand, if traffic congestion is already a real or threatening problem near the site where a congregation desires to build, and the church would bring to that community enough addtional vehicles to definitely establish congestion at that point, then the Council would be reasonably warranted, if not dutybound, to deny a permit for its erection."

> "We can see no difference in principle between the control of traffic congestion by direct legislation to the subject, as in the Cox case, supra, and the supplementation of such control under the police power by a less direct method of avoidance, when necessary through the avenue of the zoning ordinance."

Finally, on the central issue, the Court held that the local authorities were constitutionally authorized to restrict construction of churches in residence districts, and that in this instance there was sound ground for such a restriction. The regulations were also held not to abridge religious freedom.

This holding is contrary to the strong current trend on zoning for churches. Nevertheless—and perhaps because of the court's consciousness of this point—the opinion spells out the grounds for the restriction, in a well-thought-out and thorough analysis which is rare in zoning opinions.

Sign Cases—Interest in Land—Motel and Hotel

OHIO. *Ohio Valley Advertising Corporation* v. *Linzell*, 152 North Eastern (2d) 380 (Court of Appeals (intermediate court) November 6, 1957).

NEVADA. *Alper* v. *Las Vegas Motel Association*, 325 Pacific (2d) 767 (Supreme (highest) Court, May 14, 1958).

In the Ohio case, the State Highway Department had condemned certain easements over land where billboards had been erected, and the billboard company demanded compensation along with the condemnation. However, the Court held that the billboard company was a mere licensee, not a lessee, and thus of course possessed no interest in the land in question—and therefore had no right to compensation, in the absence of enabling legislation authorizing such suits.

In the Las Vegas case, a local ordinance imposed restrictions on the content of signs on motels, in order to prevent misleading advertising, but did not apply to hotels. This ordinance was challenged as involving discrimination under the equal protection clause. In the opinion, it was held that the ordinance could properly make a distinction between hotels and motels, since the evil feared was more likely to occur in connection with motels. The establishment in question, though part of a motel, was—not surprisingly, in view of the ordinance—called a hotel annex; but the Court held that this should be treated as a motel.

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LEGAL NOTES AND DECISIONS

Prepared by NATIONAL INSTITUTE OF MUNICIPAL LAW OFFICERS, Charles S. Rhyne, General Counsel

Assessment on Industrial Property Upheld

In proceeding by city appealing from judgment of Division of Tax Appeal determining assessment on industrial realty, held city had ultimate burden of persuasion to upset county board of adjustment reducing valuation made by municipal assessor. *City of Passaic* v. *Gera Mills*, 150 A.2d 67 (N.J. Super., App. Div., April 2, 1959); *City of Passaic* v. *Passaic Pioneer Properties Co.*, 150 A.2d 78 (N.J Super., App. Div., April 2, 1959).

Billboards—Refusal of License Upheld

Held, that on refusal of application for license, applicant's remedy was administrative appeal and such appeal was necessary prerequisite to judicial proceeding. *Ruth* v. *Incorporated Village of Colonie*, 184 N.Y.S.2d 271 (N. Y. Sup. Ct., Albany Cty., Sept. 26, 1958).

Building Moving Permit Denied

In action to compel issuance of building moving permit, held where lot onto which house was to be moved did not meet yard requirements and accurate plat was not presented permit denied. *State* v. *Kees*, 110 So2d 172 (La. App., Feb. 2, 1959).

City Council—"De Facto" Councilman's Acts Valid

In action concerning legality of councilman's election to office and validity of water revenue bonds, held councilman was "de facto" officer and his acts as such were valid. *Boggess* v. *Pence*, 321 S.W.2d 667 (Mo., March 9, 1959).

City Employees—Dismissal Upheld

In action by former municipal airport manager against city for alleged unlawful dismissal, held city had right to terminate manager's employment. *Kierk* v. *City of Thief River Falls*, 96 N.W.2d 28 (Minn., March 6, 1959).

Condemnation For Arterial Highway Upheld

In proceeding to condemn land to extend arterial highway to airport, held even in absence of showing of city plan with respect to said land condemnation valid. *Van Patten* v. *City of Omaha*, 94 N.W.2d 664 (Neb., Feb. 6, 1959)

Condemnation—Tenant Not Included in Award

Where lease provides for termination on taking of property for public use, held tenant has no right in leased premises which persists beyond taking and is not entitled to participate in condemnation award. *In re Site for Library in City of Minneapolis*, 95 N.W.2d 112 (Minn., Feb. 20, 1959).

Discrimination in Restaurant Enjoined

In action for injunctive relief against operator of restaurant in public building to refrain from refusing to serve Negroes, held Federal Constitution applies to restaurant leased from city parking authority. *Burton* v. *Wilmington Parking Authority*, 150 A.2d 197 (Del. Ch., April 15, 1959).

Firemen Entitled to Pay Until Officially Retired

In proceeding to continue on payroll fireman who seriously injured his eye in performance of his duties, held firemen entitled to salary until strict requirements concerning retirement are complied with by city. *Adam* v. *Farbo*, 184 N.Y.S.2d 772 (N. Y. Sup. Ct., Monroe Cty., April 13, 1959).

Gross Receipts Tax—Foreign Firm Subject to City

Where textile corporation manufactured products out-of-state but maintained offices in city to study local market and prepare designs, held corporation subject to city gross receipts tax. *Berkshire Fine Spinning Assoc.* v. *City of New York*, 157 N.E.2d 614 (N. Y., March 12, 1959). Affirming case reported at 18 MLCD 21.

Incorporation Enjoined

In action to enjoin county recorder from recording proceedings of trustees seeking to incorporate village, held plaintiff privileged not only to claim error in procedural steps but also in other matters, including justness of granting petition presented to board. *Hoye* v. *Schaefer*, 157 N.E.2d 140 (Ohio App., March 17, 1959).

Milk—License to Sell—Statute Pre-empts Field

Proceeding to compel permit to sell milk in city, held local resolution forbidding sale of milk not processed in plant located within city was unreasonable in view of statues concerning licensing of all milk plants. *Teeny* v. *Sainsbury*, 184 N.Y.S.2d 185 (N. Y. Sup. Ct., App. Div., April 8, 1959).

Notice of Claim—Not Applicable To Workmen's Compensation

Since proceeding for compensation benefits is not common-law action for damages, held notice of claim provision of city charter was not applicable to such proceeding. *City of Austin* v. *Powell*, 321 S.W.2d 924 (Tex. Civ. App., Feb. 25, 1959).

Off-Street Parking—Financing by Sales Tax Denied

In action concerning ordinance providing for parking district to be financed by bonds which were to be paid in part through creation of special fund from future revenue from city's sales tax, held ordinance invalid. *City of Palm Springs* v. *Ringwald*, 337 P.2d 153 (Calif. App., March 26, 1959).

Plumbers—City May Do Its Own Water Installing

Where city operated water system and installed taps into main to make water accessible to property and charged flat rate for doing so, held city not required to employ licensed plumbers to do the work. *Leischner* v. *Knight*, 337 P.2d 359 (Mont., Feb. 26, 1959).

Police Judge—Raise in Salary Ordered

Where city records did not establish adoption of ordinance reducing salary of police judge to $100 a month, held previous ordinance setting salary at $200 would be deemed still in effect. *Bates* v. *City of Jenkins*, 322 S.W.2d 475 (Ky., March 20, 1959).

Railroads—City Cannot Compel Relocation

In action by city to restrain railroad from continuing use of certain street, held even though mere relocation rather than abandonment might be involved court could not decree ouster of railroad from street. *City of Des Moines, Iowa* v. *Chicago & N.W. Ry. Co.*, 264 F.2d 454 (8th Cir., March 5, 1959).

Sales Tax—Merchant Cannot Recover

In suit by merchants to recover sales taxes paid under protest, held they had no beneficial interest therein which would entitle them to recover such taxes paid over to city. *Krauss Co.* v. *Develle*, 110 So.2d 104 (La., March 23, 1959)

Special Assessments Declared Invalid

Where work done on streets was paving and assessments were made under statutes providing for creation of improvement sprinkling district for purpose of sprinkling as dust palliative, assessments declared void. *Cyr* v. *City of Missoula*, 337 P.2d 365 (Mont., April 2, 1959); *Peterson* v. *City of Missoula*, 337 P.2d 367 (Mont., April 2, 1959)

Streets—Wet Paint Causes Fall—City Liable

In action for injuries sustained when person slipped on fresh paint marking parking stalls after stepping out of auto on street side where there was no warning device maintained by city, held city liable. *City of Austin* v. *Daniels*, 322 S.W.2d 384 (Tex. Civ. App., March 11, 1959).

Subdivisions—Erection of Water Tower Enjoined

Where city attempted to erect water tower in residential subdivision without paying compensation to other owners, held city cannot erect tower unless it pays just compensation to other owners. *City of Shelbyville* v. *Kilpatrick*, 322 S.W. 2d 203 (Tenn., March 12, 1959).

Tort Liability—Automobile Collision—County Not Liable

In action concerning collision of automobile which had allegedly been driven erratically in presence of deputy sheriff, held since complaint did not allege actual knowledge and that sheriff could have prevented accident county not liable. *Rubinow* v. *County of San Bernardino*, 336 P.2d 968 (Calif. App., March 24, 1959).

Taxation—Business Tax On Ocean Freight Forwarder Valid

In action concerning general business tax imposed on receipts of ocean freight forwarder from non-carriers for local services rendered, held imposition of tax valid. *Mohegan International Corp.* v. *City of New York*, 184 N.Y.S.2d 142 (N. Y. Sup. Ct., New York Cty., March 26, 1959).

Utilities—City Cannot Exclude State Licensee

In action concerning franchise to construct telephone lines in city, held such construction was not "municipal affair" and city could not exclude such lines essential to furnishing communication services to people throughout the state when company had already obtained state franchise. *Pacific Tel. & Tel. Co.* v. *City and County of San Francisco*, 336 P.2d 514 (Calif., March 17, 1959).

RECENT CITY MANAGER APPOINTMENTS

Edwin W. Medley
Artesia, Calif.

Edward A. Ewing
Weirton, W. Va.

H. J. Hilliard, Sr.
Cameron, Mo.

Gerald G. Fox
Ennis, Tex.

James O. Tennant
Barstow, Calif.

John D. Hane
Montevideo, Minn.

WILLIAM ALLEN, a Sherman, Tex., building contractor, was recently appointed manager of Clarksville, Tex., succeeding C. R. Dinwiddie.

DALE BAKER, acting city manager and former city clerk of Dewey, Okla., has recently been appointed manager of that city, succeeding Huey Long, now manager of Del City, Okla.

ARTHUR W. BREWER, city manager of San Anselmo, Calif., was recently appointed manager of Tracy, Calif., succeeding Robert L. Williams, now manager of Eureka, Calif. Mr. Brewer was formerly manager of Buena Park and Downey, Calif.

LEON CARVER, manager of Altus, Okla., for the past four years, has been appointed as the first manager of Camden, Ark. Mr. Carver formerly served as manager at Burkburnett, Tex., and Chandler and Henryetta, Okla.

E. A. EWING, of Weirton, W. Va., has been appointed the manager of that city, succeeding William L. Keli, who resigned.

GEORGE H. FELLOWS, acting city manager for the city of Pueblo, Colo., has been appointed manager of that city succeeding Glen S. Turner who has resigned. Prior to Mr. Fellows' appointment as acting manager, he served as Director of Public Works.

JOEL FORRESTER, was recently appointed manager of Meridian, Miss., succeeding L. B. Cresswell, resigned.

GERALD G. FOX, administrative assistant of San Antonio, Tex. for the past two years, is the new manager of Ennis, Tex., succeeding George R. Schrader, now manager at Mesquite, Tex.

JOHN D. HANE, assistant city manager of St. Louis Park, Minn. has been appointed as manager of Montevideo, Minn.

ALBERT C. HENRY, JR., was recently appointed manager of Ashland, N. H., succeeding Robert W. Rhodes.

TOM HENRY, for the past six years city engineer and director of public works for the City of Cherryville, N. C., was recently appointed the first manager of Brevard, N. C.

GILBERT F. HILL, formerly manager at Forest Park, Ga., was recently appointed manager of Lake Mills, Wis., succeeding William Hanson. Mr. Hill has also served as manager of Granite and Nowata, Okla.

HAROLD J. HILLIARD, SR., previously manager of Madeira Beach, Fla., is the new manager of Cameron, Mo., succeeding Glen Woods, who has resigned. Mr. Hilliard formerly served as manager of Lodi, N. J.

MAX HOLLAND, manager of Camden, S. C., for the past six years, was recently appointed the new manager of Kinston, N. C., succeeding Roy R. Robinson, now director of base operations and maintenance at Bartow Air Base, Fla. Mr. Holland was previously assistant manager of Camden, S. C.

WILLIAM T. S. JACOBSON, manager at Centreville, Ill., is the new manager of Needles, Calif. He formerly served as manager of Bethel, Vt.

JOHN F. LEE, assistant to City Manager Casey Fannin of Columbia, Mo., has been appointed manager of Victoria, Tex., succeeding Ivan P. Oliver, now manager at Gladewater, Tex.

E. W. MEDLEY, assistant manager at Ontario, Calif., was recently appointed as the first city administrator for the City of Artesia, Calif.

DIRICK E. NEDRY, city clerk and police judge at Coeur d'Alene, Idaho, has been appointed city administrator of Payette, Idaho.

JACK F. NEEL, manager at Tazewell, Va., for the past two years, is the new manager of Roxboro, N. C., succeeding W. F. Timberlake who has retired.

HERBERT E. NELSON, formerly city manager of Carlsbad, Calif., was recently appointed manager of Red Bluff, Calif. Mr. Nelson was previously an administrative analyst in San Diego, Calif.

IVAN P. OLIVER, manager at Victoria, Tex., for two years, has been appointed manager of Gladewater, Tex., succeeding Lee S. Vickers, now manager at Orange, Tex. Mr. Oliver was previously manager at Marshall, Tex.

NED W. PHYE, JR., assistant manager and finance director, Boulder, Colo., is now administrator of Fremont, Neb.

MILLARD S. QUIMBY, formerly manager at Farmington, Me., has been appointed manager of Orono, Me., succeeding Ronald W. Clifford, now director of purchases at the University of Maine. Mr. Quimby formerly was manager of Corinna and Dexter, Me.

JAMES O. TENNANT, manager at Indio, Calif., for the past three years, has been appointed the first manager of Barstow, Calif. Mr. Tennant formerly served as manager at Farmington, Mich.

FRED E. WEISBROD, manager at Painesville, Ohio, for the past two years, has been appointed the first manager of Oak Ridge, Tenn. Mr. Weisbrod served as manager of Oberlin, Ohio, for two years and as assistant to the director of public works at Silver Springs, Md.

ORIN F. NOLTING
Executive Director
International City Managers' Association

City Employees Start Credit Unions

Municipal workers in seven cities recently started their own credit unions, according to the Credit Union National Association. This makes a total of 530 credit unions that have been organized by municipal employees across the nation. Cities whose employes have started new credit unions are:

West Haven, Conn.
American Fork and Pleasant Grove, Utah
Newport Beach, Calif.
South San Francisco, Calif.
Burlington, Vt.
Bremerton, Wash.

Credit unions are private, nonprofit corporations formed by people with a common bond or mutual interest. They agree to save their money together and make loans to each other out of their joint capital. All credit unions operate under law and are chartered by either state or federal authorities. The members elect officers from among their group who serve without pay, with the possible exception of the treasurer who may be paid if the work requires a large amount of his time.

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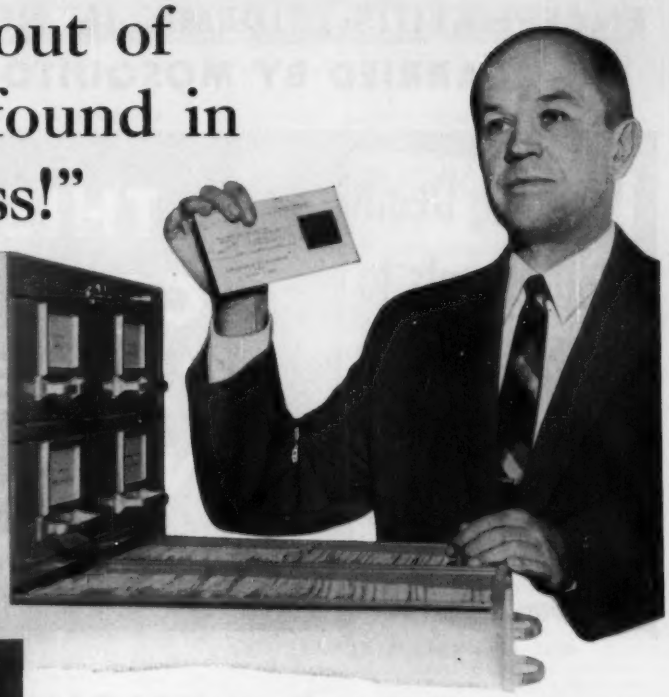

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Sleeping Death Toll Mounts to Eight in Jersey
The eighth death in southern New Jersey from encephalitis (sleeping sickness) was reported today, with 10 other cases under surveillance.
A 22-year-old man from Beach Haven, N. J., died in Atlantic City Hospital three hours after he was admitted.
THIS COULD HAPPEN IN YOUR COMMUNITY
SLEEP SICKNESS DEATHS REACH 11
ATLANTIC CITY, Sept. 28 (UPI)—Health officials collected mosquitoes and wild birds in three southern counties today in an effort to pinpoint the cause of a sleeping sickness epidemic has claimed 11 lives.
He Went Into Convulsions

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THE BUFFALO TURBINE SPRAYER-DUSTER KILLS MOSQUITOS FAST!

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As this is being written, the death toll in southern New Jersey has risen to 20 . . . people of all ages, bitten by mosquitos carrying the deadly Encephalitis virus. This unfortunate epidemic should be a lesson to all communities, large and small, to continuously wage a relentless war on disease carrying mosquitos. This requires that adequate funds be made available each year, for the necessary spraying equipment, insecticides and men to carry out a planned program of positive mosquito control. Only with such action can you be sure that the people in your community will be spared from a similar fate.

Effective and long-lasting insect control calls for positive destruction of both larvae and adults. The Buffalo Turbine is the only sprayer on the market that dispenses both liquid and dust for larviciding and adult insect control.

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CONVENTIONS — WHEN AND WHERE

Conventions listed this month for the first time are indicated by an asterisk (*)

Nov. 9-11—Durham, N. C.
AMERICAN WATER WORKS ASSOCIATION—North Carolina Section jointly with North Carolina Sewage and Industrial Wastes Association. Annual Meeting (Washington Duke Hotel). Exec. Sec., D. York Brannock, 1703 Woodland Ave., Burlington, N. C.

Nov. 10-13—Atlantic City, N. J.
PENNSYLVANIA WATER WORKS ASSOCIATION. Annual Meeting (Chalfonte-Haddon Hall). Sec., David Dunlap, 2609 N. Second St., Harrisburg, Pa.

Nov. 15-18—Scranton, Pa.
PENNSYLVANIA LEAGUE OF CITIES—Annual Meeting (Hotel Casey). Exec. Dir., John N. O'Neil, 506 State Street Bldg., Harrisburg, Pa.

Nov. 15-18—Springfield, Mass.
NATIONAL MUNICIPAL LEAGUE. National Conference on Government (Sheraton-Kimball Hotel). Asst. Dir., Allen H. Seed, Jr., 47 E. 68th St., New York, N. Y.

Nov. 15-19—Tampa, Fla.
AMERICAN WATER WORKS ASSOCIATION—Florida Section jointly with Florida Sewage and Industrial Wastes Association. Annual Meeting (Hillsboro Hotel). Sec.-Treas., J. G. Simmons, Box 1311, West Palm Beach, Fla.

Nov. 16-20—Stillwater, Okla.
OKLAHOMA WATER, SEWAGE AND INDUSTRIAL WASTES ASSOCIATION. Annual Short Course and Industrial Wastes Conference (Student Union). Sec.-Treas., H. M. Crane, 3400 N. Eastern, Oklahoma City, Okla.

Nov. 17-20—Atlantic City, N. J.
NEW JERSEY STATE LEAGUE OF MUNICIPALITIES. Annual Meeting (Chalfonte-Haddon Hall). Exec. Dir., Robert H. Fust, 603 Trenton Trust Bldg., Trenton, N. J.

***Nov. 19-21—Havana, Cuba**
AMERICAN WATER WORKS ASSOCIATION—Cuban Section. Annual Meeting (Havana Club). Sec., Juan Berasategui, Calle K, No. 303, Apdo. 22, Vedado, Havana, Cuba.

Nov. 29-Dec. 2—Denver, Colo.
AMERICAN MUNICIPAL ASSOCIATION. Annual Convention (Brown Palace Hotel). Exec. Dir., Patrick Healy, Jr., 1612 K St. N.W., Washington 6, D. C.

Dec. 2-3—Washington, D. C.
ASPHALT INSTITUTE. Annual Meeting (Shoreham Hotel). For information address Asphalt Institute, University of Maryland, College Park, Md.

Dec. 3-4—Washington, D. C.
THE TAX INSTITUTE. Annual Symposium (Mayflower Hotel). Exec. Dir., Mabel Walker, 457 Nassau St., Princeton, N. J.

***Jan. 6-8—New York, N. Y.**
NORTHEASTERN WEED CONTROL CONFERENCE. Annual Meeting (Hotel New Yorker). Sec.-Treas., D. A. Schallock, Rutgers, The State University, New Brunswick, N. J.

***Jan. 11-15—Washington, D. C.**
HIGHWAY RESEARCH BOARD. Annual Meeting (Sheraton-Park Hotel). Dir., Fred Burggraf, Highway Research Board, 2101 Constitution Ave., Washington 25, D. C.

Jan. 18-21—Cincinnati, Ohio
AMERICAN ROAD BUILDERS' ASSOCIATION. Annual Convention (Netherland Hilton Hotel). Exec. Vice Pres., Louis W. Prentiss, 600 World Center Bldg., Washington 6, D. C.

***Jan. 20-22—New York, N. Y.**
NEW YORK SEWAGE & INDUSTRIAL WASTES ASSOCIATION. Annual Meeting (Sheraton-Park Hotel). Exec. Sec., R. C. Sweeney, State Department of Health, 21 North Broadway, White Plains, N. Y.

***Jan. 25-27—Memphis, Tenn.**
ASSOCIATION OF ASPHALT PAVING TECHNOLOGISTS. Annual Meeting (Peabody Hotel). Sec.-Treas., Ward K. Parr, 1224 E. Eng. Bldg., Box 619, Ann Arbor, Mich.

***Jan. 28-30—Hollywood, Calif.**
CALIFORNIA STREET & HIGHWAY CONFERENCE. Annual Meeting (Hollywood-Roosevelt Hotel). Sec., Bob Glenn, I.T.T.E., University of California, Berkeley, Calif.

***Feb. 3-5—Indianapolis, Ind.**
AMERICAN WATER WORKS ASSOCIATION—Indiana Section. Annual Meeting (Sheraton-Lincoln Hotel). Sec.-Treas., Chester H. Canham, 1330 W. Michigan St., Indianapolis 7, Ind.

***Feb. 8-10—New York, N. Y.**
ASSOCIATION OF TOWNS OF THE STATE OF N. Y. Annual Meeting (Commodore Hotel). Exec. Sec., William K. Sanford, 91 State Street, Albany, N. Y.

***March 6-12—San Francisco, Calif.**
AMERICAN CONCRETE PIPE ASSOCIATION. Annual Convention (The Fairmont Hotel). Managing Dir., Howard F. Peckworth, 228 N. LaSalle St., Chicago 1, Ill.

***April 12-15—Los Angeles, Calif.**
AMERICAN SOCIETY FOR PUBLIC ADMINISTRATION. Annual Meeting (University of Southern California). Exec. Dir., Robert J. M. Matteson, 6042 Kimbark Ave., Chicago 37, Ill.

May 15-20—Bal Harbour, Fla.
AMERICAN WATER WORKS ASSOCIATION. Annual Convention (Americana Hotel). Exec. Sec., Raymond J. Faust, 2 Park Ave., New York, N. Y.

***Oct. 2-6—Philadelphia, Pa.**
FEDERATION OF SEWAGE AND INDUSTRIAL WASTES ASSOCIATIONS. Annual Meeting (The Trade & Convention Center). Exec. Sec., Ralph E. Fuhrman, 4435 Wisconsin Ave. N.W., Washington 16, D. C.

Christmas Projects for Municipal and Civic Groups

Any local city employee group, or any civic organization looking for special Christmas projects, can get assistance from the local Christmas Bureau project of their city's Community Welfare Council.

The United Community Funds and Councils of America, 345 E. 46th Street, New York 17, New York, points out that while nobody wants to be a Scrooge, many don't know how to go about helping the less fortunate in the best manner. In the past, Christmas baskets and parties for orphans were the order of the day. Today, however, with homeless children most often being placed in foster or adoptive homes rather than institutions, the need for special parties no longer exists. Besides, when children are removed from familiar settings and taken to a club-sponsored party, there may be harmful effects. Other children sometimes resent being singled out as "poor kids" and their parents don't want their children to be known as "underprivileged."

Christmas Bureaus have been established to coordinate Christmas giving. They serve to eliminate duplications whereby certain families well known to agencies receive several gifts and others are forgotten. They help to remember the aged and the lonely, the sick and the neglected, as well as the children.

Under today's Christmas Bureau operations, parents are allowed to select gifts for their children and to give the presents themselves. They aren't embarrassed by having someone drive up to the door and present packages while the children and neighbors are looking. This helps to preserve their dignity.

The gifts they choose themselves may be far more meaningful. For example, a 70-year-old man had been receiving food baskets for several years but his happiest Christmas was the time when through the newly established Christmas Bureau he received a set of dentures which he wanted so badly. With his new teeth, he felt like meeting people and talking to his neighbors.

Often groups of firemen will take part in Christmas Bureau operations by offering to repair used toys.

The Christmas project may be known by different names, such as Christmas Clearing House or Christmas Committee.

MUNICIPAL AND CIVIC PUBLICATIONS

Publications on these pages are available from the addresses indicated and are usually free unless a price is given.

Contract Bonds

BONDS OF SURETYSHIP—*The Surety Association of America, 60 John Street, New York 38, N. Y.* 1959. 44 *pp.*

The somewhat controversial subject of requiring construction contract bonds is discussed favorably in this little book. Most useful to municipalities is the section on types of bonds; labor and material bonds; bid bonds; license lien bonds; maintenance bonds and other kinds of contract bonds.

City Planning

THE STUDY OF CITIES—*By Gregor Paulsson. Scandinavian Summer University, Copenhagen, Denmark.* 1959. 92 *pp.* $2.

An intriguing little book containing information more of philosophic and curiosity value than of immediate practical use. It shows that city planners are members of a profession dating far back into antiquity. It gives the old gridiron plan new dignity when one realizes that Aristotle commented on it.

Apartment House Incinerators

MODIFICATIONS TO REDUCE EMISSIONS FROM A FLUE-FED INCINERATOR—*By E. R. Kaiser, J. Halitsky, M. B. Jacobs and L. C. McCabe. New York University, Research Division, New York 53, N. Y.* 1959. 51 *pp. Paperbound.*

A study reporting that flue-fed apartment house incinerators can be made less offensive if you put enough attachments on them and operate them correctly. The report does not tell how a city can be sure that the apartment house janitors who operate these incinerators will do so either conscientiously or knowledgeably, particularly when the apartment house management has no real interest in the matter. Despite this, those interested in refuse disposal should have this study.

Auto Exhaust As a Smog Problem

ELIMINATION OF OXIDES OF NITROGEN FROM AUTOMOBILE EXHAUST—*By Francis R. Taylor. Air Pollution Foundation, 2556 Mission Street, San Marino, Calif.* 1959. 49 *pp.* $2.

This report in the Foundation's continuing study points a finger at nitrogen oxides as key villains in the smog problem. It records that 65% to 85% of these oxides result from gasoline used in automobiles. It then explains that these can be removed by passing the exhaust gases through iron chromite catalysts. Apparently the study has not yet produced a practical attachment for cars and trucks.

Aluminum Construction

ALUMINUM CONSTRUCTION MANUAL—*The Aluminum Association, 420 Lexington Avenue, New York 17, N. Y.* 390 *pp.* $3.

A reference book for use by engineers, designers, architects, concerned with the use of aluminum in stressed structures; it includes allowable load data for aluminum alloy 6061-T6.

City Governments

HOW CITIES ARE ORGANIZED—*By James E. Larson. Bureau of Public Administration, University of Alabama, University, Alabama.* 1959. 34 *pp.*

A well-written little book that provides a concise, interesting explanation of the various types of local governments. Its explanation of each will be of help to the new municipal official.

Bidding Procedure

BIDDING PROCEDURE ON ENGINEERING CONSTRUCTION; BIDDING PROCEDURE ON BUILDING CONSTRUCTION; INSURANCE AND BOND CHECK LIST — *Associated General Contractors of America, 20th and E Sts. N.W., Washington, D. C.* 1959. 3 *pamphlets.*

A handy set of guides for any city engineering department looking for ways to improve its public bidding practices on construction work.

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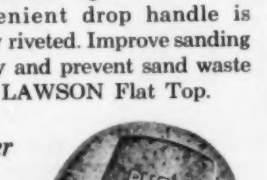

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Puerto Rico

PUERTO RICO: MIDDLE ROAD TO FREEDOM *By Carl J. Friedrich. Reinhart & Co., Inc., 232 Madison Avenue, New York, N. Y. 85 pp. Paperbound. $2.*

In view of the immense amount of attention directed toward this heavily populated island commonwealth, students of local government will find this little book revealing. First, it discloses differences of opinion on the word "freedom;" second'y, it shows the weaknesses of the present commonwealth arrangement; and third, it pays tribute to the great leadership of Governor Munoz Marin, who has given the people of this island the opportunity to choose dynamic, progressive government, backed by a stimulating industrial program, based on free democratic processes.

Property Appraisal

APPRAISAL AND VALUATION MANUAL, VOL. 4—*Edited by Paul B. Coffman. American Society of Appraisers, Manual Division, Suite 1105, 369 Lexington Avenue, New York 17, New York.* 1959. 525 *pp.* $15.

Just what the doctor ordered for the municipal assessor. The book contains 40 separate articles telling how to appraise such items as taxable personal property, a modern hotel, housing, sand and gravel deposits, trees, riparian rights and many other subjects.

Zoos

ZOO REPORT—*Metropolitan Planning Department, Room 405, City Hall, Indianapolis 4, Indiana.* 1959. 20 *pp.* 50 *cents.*

A small but constructive little pamphlet telling how to find a place for a zoo in a municipality, specifically in the Indianapolis area. It has a helpful discussion of zoo types and location factors.

Industrial Planning

MADE IN NEW YORK—*Edited by Max Hall. Harvard University Press, Cambridge 38, Massachusetts.* 1959. 388 *pp.* $6.75.

A somewhat labored study of industry in the New York City region, confined to women's and children's apparel, printing and publishing, and electronics. While the evidence is not particularly encouraging for New York, the analysis will be instructive to others trying to determine all the industrial factors applying to their own localities.

Land Use Law

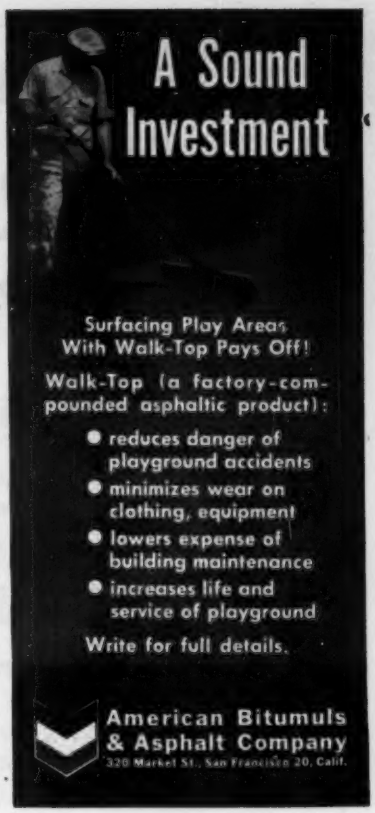
LAND USE PLANNING—*By Charles M. Haar. Little, Brown & Company, Boston, Massachusetts,* 1959. 790 *pp.* $10.

This book is a tool for the city planner, zoning official, or attorney who finds himself in a legal corner on land-use planning. Its many decisions quoted, case histories cited and examples given provide ample amounts of precedent for most situations.

Taxation

SOURCES OF MUNICIPAL REVENUE—*Prepared by Anna Sternheimer.* C1-121 *Cordell Hull Building, Nashville 3, Tennessee.* 1959. 69 *pp.* $1.

A rundown on how Tennessee cities can improve their financial positions by better administration of the property tax, tapping new tax sources, instituting certain service charges, and getting a more adequate slice of shared taxes. No reason at all why cities in states other than Tennessee won't find this useful, too.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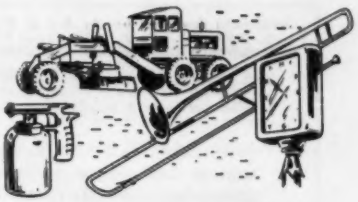

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Managing Editor, None

Business Manager, None

Editor, William S. Foster, 470 Park Avenue South, New York 16, N. Y.

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EDGAR M. BUTTENHEIM
Publisher

Sworn to and subscribed before me
this 8th day of September, 1959
Queens County Clerk's No. 41-0192115
(My commission expires March 30th, 1961)

GERTRUDE E. BAUER
Notary Public
Queens County, N. Y.

Municipal Meeting

PROCEEDINGS OF THE AMERICAN MUNICIPAL CONGRESS, 1958 — *American Municipal Association, 1612 K St. N.W., Washington 6, D. C.* 1959. 114 *pp.*

A bound volume of the papers presented at the Boston meeting of the AMA, including everything except comments in the corridors. Topics include: urban renewal, metropolitan organization, civil defense, airports. It also carries the speech of a somewhat anti-urban congressman, balanced by a strongly pro-urban senator and by a Democratic and a Republican Senator. In all cases, the papers are easy to read and thought-provoking.

Public Health

PUBLIC HEALTH LAWS OF PENNSYLVANIA—*Edited by David Stahl. School of Law, University of Pittsburgh, Pittsburgh, Pennsylvania.* 1958. 767 *pp.*

A cyclopedia of regulations presented with a certain amount of comment relating to urban health problems in this state. The variety is wide, includes vital statistics, hospitals, food and beverages, drugs and alcohol, school health, child and maternal health, housing sanitation or pollution, industrial health, stream pollution, water and public bathing.

The book shows that the State of Pennsylvania has little legislation on the health aspect of refuse collection and solid waste disposal and not much on air pollution.

Small-City Migration

PATTERNS OF MOBILITY 1910-1950—*By Sidney Goldstein, University of Pennsylvania Press, Philadelphia, Pennsylvania.* 1958. 254 *pp.* $7.50

This book reports a Ford Foundation financed study of population movements in Norristown, Pa., a city that has grown from 25,000 to 38,000 in 50 years. The city has grown slowly enough so that the study is not handicapped by the usual superficial urban-sprawl cliches. The essence seems to be that there is considerable in-and-out migration which in this case just about balances. The study is more thorough than a mere search of census records. The direct application of these findings to other cities, however, seems a little obscure.

Evaluate Your Water System

PRICELESS WATER—*Johns-Manville, 22 East 40th Street, New York 16, N. Y.* 1959. 83 *pp.*

A great deal of thought has gone into this book. Every city ought to get one and should insist that its water utility's manager and engineer evaluate the water system according to the questions and standards presented. It also presents some practical programs designed to sell water improvements to the public, including financing.

Library Management

HANDBOOK FOR LIBRARY TRUSTEES—*By Marian M. Winser, R. R. Bowker Co., 62 W. 45th Street, New York 36, N. Y.* 1959. 181 *pp.* $5.

A book designed to be of guidance to the lay people appointed to the boards of most municipal libraries. It discusses such rudimentary administrative duties as the staff, fund raising, building problems, public relations, community organizations, taxes and bond issues. It also speaks briefly but forthrightly on library censorship and argues in restrained but earnest fashion for the "public's right to read."

Jet Airports

AIRPORTS FOR JETS—*By Maj. John E. Peterson. American Society of Planning Officials,* 1313 *E. 60th St., Chicago* 37, *Ill.* 1959. 86 *pp.* $2.50. *Quantity discounts.*

Major Peterson, USAF, also holds a master's degree in city planning. His analysis of what the jet age will do to airport use today makes informative reading. His analysis of noise problems tends to be technical enough to make it difficult to grasp. But his chapters on airport site characteristics, design factors, and location requirements are easily understood and helpful.

County Government

COUNTY HOME RULE—*By Gladys M. Kammerer. Public Administration Clearing Service, Peabody Hall, University of Florida, Gainesville, Fla.* 1959. 19 *pp.*

County officials, long used to providing service to rural areas, will find this little discussion helpful, during the time that their county changes from rural to urban. Of particular significance is the observation that home rule is a right that must be fought for and won, often against stubborn opposition, and that can be lost without great difficulty.

The author does not hesitate to point out difficulties with county home rule.

Other Reports Received

ADMINISTRATION & GOVERNMENT

MASSACHUSETTS — Permissive Legislation Area Services. Institute of Government and Public Affairs, University of Illinois, Urbana, Ill. 1959. 59 pp.

MASSACHUSETTS — Permissive Legislation for Municipalities in Massachusetts. Bureau of Government Research, University of Massachusetts, Amherst, Mass. 1959. 32 pp.

NEW YORK—Digest of Laws Affecting Towns (1959). William K. Sanford, Office of the Executive Secretary, Association of Towns of the State of New York, Albany, N. Y. 1959. 52 pp.

RICHMOND, VA.—Statement of Local Governments of the League of Virginia Municipalities. League of Virginia Municipalities, 905 Travelers Bldg., Richmond 19, Virginia. 1959. 12 pp.

AIR POLLUTION

LOUISVILLE, KY.—The Air Over Louisville. Air Pollution Study of Louisville and Jefferson County, City Hall, Louisville, Ky. 1959. 56 pp.

ANNUAL REPORTS

AUBURNDALE, FLA.—A Report on the City of Auburndale. Office of the City Manager, City Hall, Auburndale, Fla. 1959. 14 pp.

ESSEX COUNTY, MASS.—Annual Report of the County Engineer. Office of the County Clerk, Salem, Mass. 1958. 24 pp.

HONOLULU, HAWAII—26th Annual Report, 1958 (Honolulu Police Department). The Police Commission, Honolulu Police Department, City and County of Honolulu, Honolulu 13, Hawaii. 1958. 16 pp.

IRVINGTON, N. J.—Annual Report (1958). Office of the Mayor, Municipal Bldg., Irvington, N. J. 1959. 55 pp.

LAKEWOOD, CALIF.—1958 Annual Report. Office of the Mayor, City Hall, Lakewood, Calif. 1959. 12 pp.

LEWISTON, ME.—Annual Report. Office of the City Clerk, City Hall, Lewiston, Me. 1959. 52 pp.

SEATTLE, WASH.—A Report to the Citizens of Seattle, 1958-1959. Office of the Mayor, City Hall, Seattle, Washington. 1959. 16 pp.

WESTMOUNT, QUEBEC, CANADA — Annual Report (1958). Office of the Mayor, City Hall, Westmount, Quebec, Canada. 1959. 44 pp.

CIVIL DEFENSE

BATTLE CREEK, MICH.—Index to Office of Civil and Defense Mobilization Publications, cumulative through April 15, 1959. Office of Civil and Defense Mobilization, Battle Creek, Mich. 1959. 20 pp.

FINANCE & TAXATION

COVINA, CALIF.—1959-1960 Annual Budget. Office of the City Administrator, City of Covina, Covina, California. 1959. 108 pp.

GREENWICH, CONN.—Down to Earth (Summary of the Annual Report). Board of Estimate and Taxation, Town Hall, Town of Greenwich, Conn. 1959. 82 pp.

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PHILADELPHIA, PA.—1958 Philadelphia Financial Report. Office of the Director of Finance, 802 City Hall Annex, Philadelphia 7, Pa. 1959. 31 pp.

SALT LAKE CITY, UTAH—Auditor's Annual Financial Report of Salt Lake City Corporation (1958). Office of the City Auditor, Salt Lake City, Utah. 1959. 78 pp.

SAN ANTONIO, TEX.—Procedure Manual. Director of Finance, City Hall, San Antonio, Tex. 1959. 350 pp.

TEXAS—Proceedings of the Fifth Governmental Accounting and Finance Institute. Institute of Public Affairs, The University of Texas, Austin, Texas. 1959. 68 pp.

VALLEJO, CALIF.—Budget. Office of the City Manager, City Hall, Vallejo, Calif. 1959. 108 pp.

PLANNING, ZONING & HOUSING

BALTIMORE, MD.—Planning Report No. 1: The Baltimore Region—A Look At the Future. 46 pp. $1.50. Technical Report No. 1: Regional Land Use. 74 pp. $1. Technical Report No. 2: Industrial Land Development. 85 pp. $1. Technical Report No. 3: Freeway Plan. 43 pp. $1. Technical Report No. 4: Water Supply and Sewerage. 40 pp. $1. Baltimore Regional Planning Council, State Office Bldg., 301 West Preston St., Baltimore 1, Md. 1959. Complete set of five books, $4.50. Checks should be made payable to: State Planning Department.

GRAHAM, N. C.—Development Plan for Graham, North Carolina. Prepared by Division of Community Planning, Department of Conservation & Development, State of North Carolina. Office of the City Manager, Graham, N. C. 1959. 26 pp.

HACKENSACK, N. J.—Annual Report of Progress (1958). County Planning Board, County of Bergen, Hackensack, N. J. 1959. 37 pp.

JUNEAU, ALASKA — Comprehensive Plan. City Planning Commission, City Hall, Juneau, Alaska. 1958. 14 pp.

MINNEAPOLIS, MINN.—Department Managers' Development Conference. Public Administration Center, University of Minnesota, Minneapolis 14, Minn. 1958. 21 pp.

NEW YORK, N. Y.—A Citizen's Guide to Rezoning. Citizens' Housing and Planning Council of New York, Inc., 20 West 40th Street, New York 18, N. Y. 1959. 40 pp.

PARKTON, N. C.—Development Plan. Division of Community Planning, City Hall, Parkton, N. C. 1959. 32 pp.

PITTSBURGH, PA.—Rules and Regulations and Forms for Zoning Boards of Adjustment. Institute of Local Government, Graduate School of Public and International Affairs, University of Pittsburgh, Pittsburgh, Pa. 1959. 32 pp.

PROVIDENCE, R. I.—Capital Improvement Program. City Plan Commission, Suite 103, City Hall, Providence, 3, R. I. 1959. 34 pp.

SACRAMENTO, CALIF. — Relocation Plan: Slum Area Labor Market. Redevelopment Agency of the City of Sacramento, 1006 Fourth Street, Sacramento 14, Calif. 1959. 38 pp.

PUBLIC WORKS

CHICAGO, ILL.—Chicago Public Works 1958 Annual. George L. DeMent, Commissioner of Public Works, City Hall, Chicago, Illinois. 1959. 32 pp.

TACOMA, WASH.—Progress Thru Service. Department of Public Utilities, City Hall, Tacoma, Washington. 1959. 52 pp.

TENNESSEE—Bid Data On Current Municipal Public Works (Technical Bulletin No. 36). MTAS, P. O. Box 8260, University of Tennessee, Knoxville. Tennessee. 1959. 84 pp.

URBAN RENEWAL

CLIFTON, N. J.—Intermunicipal Urban Renewal Study. Passaic Valley Citizens Planning Association, 312 Clifton Avenue, Clifton, N. J. 1959. 6 pp. $1.

KANSAS CITY, KAN.—Annual Report. Urban Renewal Agency, 619 Ann Avenue, Kansas City, Kan. 1959. 20 pp.

MEMPHIS, TENN.—General Area Studies, Report No. 1 of 3. League of Memphis Architects, Inc. Memphis, Tennessee. 1959. 22 pp.

MOUNT CLEMENS, MICH.—A Program for Progress. Redevelopment Department, 26 Market Street, Mount Clemens, Mich. 1959. 20 pp.

NEWARK, N. J.—An Event to Remember. (The historical story of Newark, on exhibition). Newark Museum, Newark, N. J. 1959.

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SPRINGFIELD, ILL.—Preliminary Plans For Rail Circulation. City and Regional Planning Commissions, 617 East Jefferson, Springfield, Ill. 1959. 26 pp.

WASHINGTON, D. C.—College Hill, A Demonstration Study of Historic Area Renewal. Housing and Home Finance Agency, Urban Renewal Administration, Washington 25, D. C. 1959. 213 pp.

WATER

GENERAL—Water Pollution Abatement Manual, Manual Sheet W-5. Manufacturing Chemists' Association, Inc., 1825 Connecticut Avenue N.W.,, Washington 9, D. C. 1959. 53 pp. $5.

ELMIRA, N. Y.—100th Anniversary, 1859-1959. Elmira Water Board, Municipal Building, Elmira, N. Y. 1959. 36 pp.

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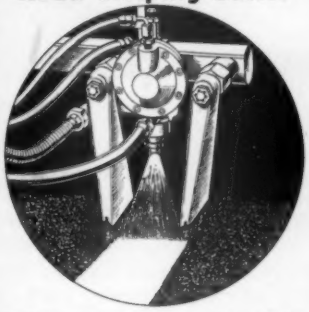
From September 2, to October 1, 1959

Date of Issue	*Locality*	*Amount in $1000*	*Purpose*	*Terms Yrs. to Maturity*	*Yield %*
9/2/59	Greece, N. Y.	580	General Improvement	15¼	3.96
9/3/59	Bangor, Me.	780	Perm't Pub. Improvement	10½	3.65
9/8/59	Parma, Ohio	962	General Purpose	3 to 7 1/6	4.73
9/9/59	Bedford, Ohio	150	Water & Sewer Loan	8	3.97
9/9/59	Chicago Ill., Park Dist.	7,000	Working Cash Fund	6	3.57
9/10/59	Fairbanks, Alaska	7,500	Mun. Util. Refund & Imp.	½ to 22	4.92
9/14/59	Mt. View, Calif.	1,197	Parking District Revenue	1 to 29	5.72
9/15/59	Atlantic City, N. J.	3,000	General Improvement	10½	4.49
9/15/59	Clearwater, Fla.	630	Utility Revenue	2 to 28	4.42
9/16/59	Flemingsburg, Ky.	500	Water & Sewer Revenue	2 to 40	5.27
9/17/59	Cambridge, Md.	1,350	Water System Revenue	1 to 29½	4.64
9/18/59	La Porte, Texas	550	Municipal Improvement	9¾ to 26 1/6	4.74
9/22/50	Cook County, Ill.	44,000	Hospital, General, Highway	8½	3.99
9/23/59	Indianapolis, Ind., San. Dist.	600	Sanitary	16¼	3.73
9/23/59	Portland, Me.	2,050	Improvement	10⅓	3.48
9/24/59	Jasper, Ala., Water Works and Gas Board	600	Combined Util. Rev.	1 to 30	4.70
9/28/59	Lewiston, Me.	650	Various Purpose	13	3.83
9/29/59	Detroit, Mich.	4,000	Public Sewer	3 to 25	4.18
9/29/59	Newport News, Va.	4,000	General Improvement	1 to 20	3.87
10/1/59	Laval De Rapides, Que.	571	Various	1 to 10	7.47

Compiled from **THE BOND BUYER**

New Kelly-Creswell Spray Gun Makes Road Striping Easier



Kelly-Creswell Company, Xenia, Ohio, has a new automatic striping gun for use on highway and industrial road marking equipment. Gun is patented.
The gun is diaphragm-operated, which eliminates the air cylinder and upper packing gland found in most spray guns. This eliminates the greatest cause of air loss in automatic spray guns. The new gun requires about 25% less air to operate at peak efficiency.
The gun is being installed on all the various types of striping equipment made by Kelly-Creswell. Also available as a replacement part.
Kelly-Creswell is a pioneer manufacturer of a complete line of road-marking equipment—truck-mounted, power driven and hand operated.

For additional information write
Kelly-Creswell Company
Xenia, Ohio
20th year in exclusive manufacture of Striping Equipment

PREVENT *PANIC!*
when lighting FAILS
be prepared with
Big Beam
AUTOMATIC
EMERGENCY LIGHTS

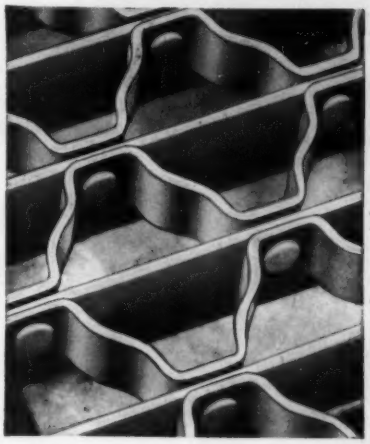
When your BIG BEAM Emergency Light is plugged in, you're safe. It lights automatically when lights fail. Gives hours of brilliant light.

Hand Lamps • Flares
Wide range of electric hand lamps and flares. Write for bulletin on BIG BEAM line.

7027

U-C-LITE MFG. CO. 1063 W. Hubbard St. Chicago 22, Illinois
Canada: Bernard Marks & Co., Ltd., 70 Claremont St., Toronto 3, Ont.

***New* "CK" BRIDGE DECKING ENDS WEAVING OF CARS**



Modification of the original Irving Type V Decking has eliminated "weaving" on open mesh steel floors. The improvement is effected by a 3/16" elevation difference of the crimped bars over the straight bars.

"CK" Decking, successfully field-tested for 4 years, has the same advantages of safety, strength, durability and self-maintenance as standard Type V Decking

Write for Complete Information on New "CK" DECKING.

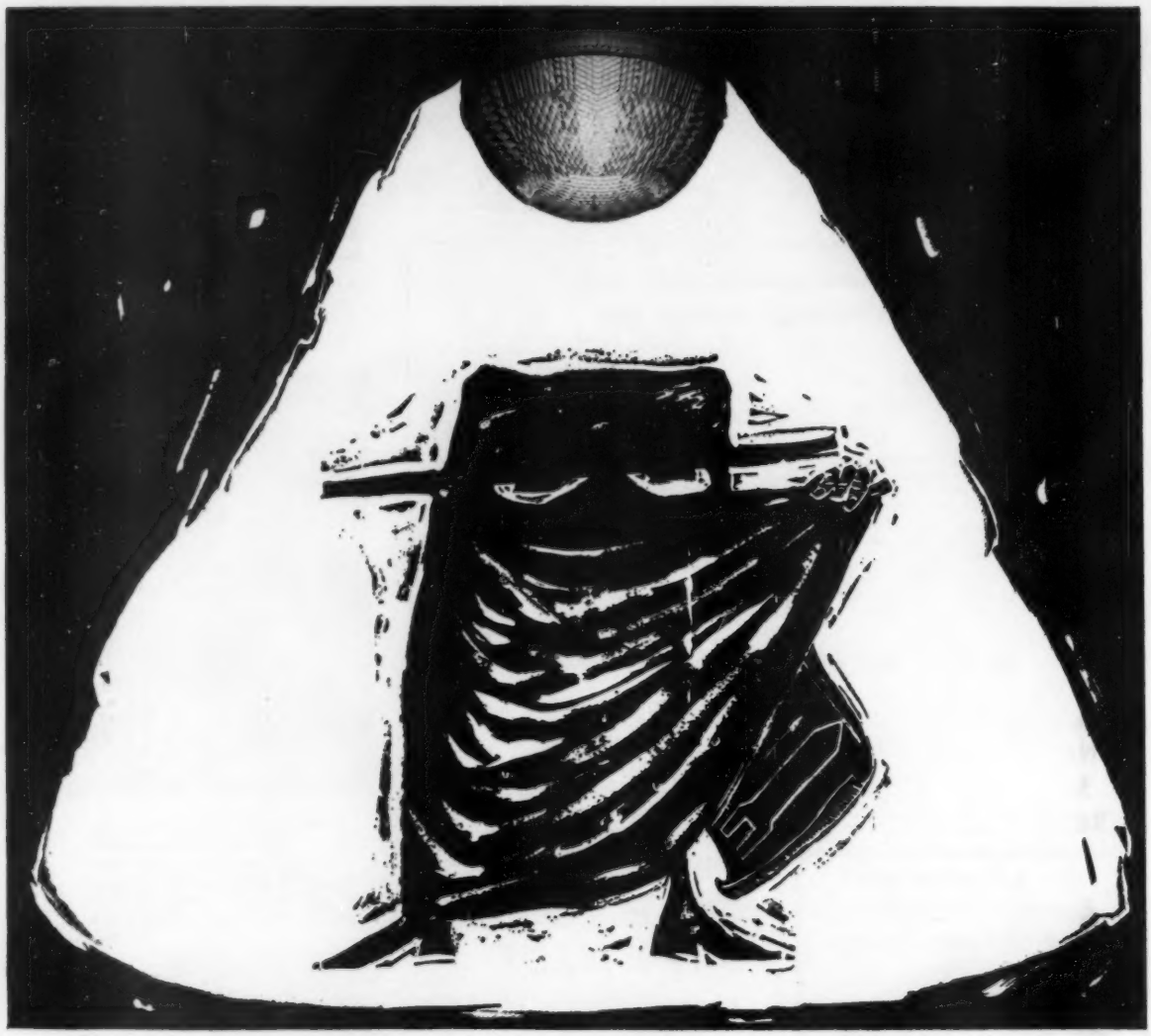
★

"A Fitting Grating for Every Purpose"

IRVICO

IRVING SUBWAY GRATING CO., Inc.
Originators of the Grating Industry

Offices and Plants at
5030 27th St., Long Island City 1, N. Y.
1830 10th St., Oakland 23, California



Caught!

. . . when you replace aimless light by a controlled beam

Crime thrives on darkness—to cover an assault or theft, to shield an escape.

Statistics prove that *brilliant illumination* quickly cuts crime rates in trouble areas. Thugs find well-lighted streets and shops far less attractive for their crimes.

If *your* streets and highways have *aimless patterns of light* outside the road and sidewalk area, the street lamps *aren't doing the job*. Lenses—*not* just protective glass enclosures—on your street lamps will give a clear, *overall* light pattern.

These lenses *control* light distribution, don't let light drift off in many directions where it's wasted. They make streets *brighter* for the added safety of your entire community.

That safety is not limited to protection against crime, either. Driving is easier on well-lighted streets, and therefore walking is safer too. And, for reliability, tough PYREX brand glass refractors resist damage from heavy storms, extreme cold, or vandals.

Let the manufacturers of street lighting equipment show you what an up-to-date lighting system can do. That's the first step toward making your town a brighter—and safer—place in which to live.

For further information, just write Corning Glass Works, 63 Crystal Street, Corning, New York.

CORNING GLASS WORKS

CORNING MEANS RESEARCH IN GLASS

PURCHASING NEWS

Improved Sewer Cleaning Equipment

Automatic features that make operation easier and greater power, pull and capacity enable this all-power Sewerking bucket machine to clean more sewer at lower cost.

The manufacturer reports many important engineering advancements have been incorporated in its Sewerking bucket machine, designed to remove large deposits of sand, silt, roots and other heavy obstructions from sewers by power and at considerable reduction in labor and job time. Built for heavy duty and safety in use, it is offered in 9, 16 and 25 horsepower.

Also available is a model that incorporates a continuous dumper feature, which takes bucket loads as they come from the sewer and conveys them directly into a loading truck. For complete information, write O'BRIEN MANUFACTURING CORP., 5632 NORTHWEST HIGHWAY, CHICAGO 46, ILL., or use the Post Card on Page 56. Circle No. 731.

Cuts Trenches to 5′ Depths, 12″ Width

The 12-hp Model 322 Ditch Witch is a completely new trencher, scaled up from the popular Model M-3 to handle wider and deeper trenches and even tougher digging conditions. It can be used for foundation footings sewer laterals, drain fields (double cut trench), water lines to 5′ cover, gas services and main extensions and underground telephone cable installations oil-field gathering systems and salt water lines.

Model M-322 is powered by a Wisconsin AGN 12-hp, air-cooled engine and is equipped to dig ditches 5′ deep, 4″ wide; 4′ deep, 6″ wide; 3½′ deep, 8″ wide; 3′ deep, 10″ and 12″ wide—in any soil. For additional information, write WITCH MARKETING CO., 1959 W. FIR AVE., PERRY, OKLA., the marketing organization of The Charles Machine Works, Inc., or use the Post Card on Page 56. Circle No. 709.

Plans West Coast Expansion

The Robert M. Langmack Company, Los Angeles manufacturers' representative has been appointed to handle expansion to the West Coast of the aluminum lighting standards department of Read Standard of York, Pa., a division of Capitol Products Corp., Mechanicsburg, Pa.

Aluminum lighting standards for every outdoor light need—in residential as well as business areas—will be warehoused in Los Angeles to provide prompt service throughout Southern California, Nevada and Arizona.

According to Robert M. Langmack, head of the company bearing his name, Read Standard plans partial fabrication on the West Coast within a year, and complete fabrication within two years.

Truck-Mounted Lifting Equipment

Municipalities find that the Hydra-Lift crane, made by PITMAN MFG CO., GRANDVIEW, MO., loads hauls and places pipe, valves and fittings, utility poles, transformers and other equipment with speed and safety. Its smooth, positive hydraulic action is said to make possible the positioning any load within inches.

With an aerial basket attached, the Hydra-Lift can be adapted to many overhead maintenance jobs, such as street lighting, transmission line work and tree trimming. In the accompanying photo it is working for Premier Electric Co. of Chicago, Ill. The job at hand is that of putting finishing paint touches on 30-foot light poles along the Illinois East-West Tollway. Premier's contract called for complete installation and preliminary maintenance of 460 lighting units. Two men—truck driver and high-riding maintenance man—complete 24 per day.

There are several models of the Hydra-Lift available. For complete information, write the company, or use the Post Card on Page 56. Circle No. 711.

New Line of Valves

The new W-K-M semi-steel plug valves require no lubrication and are suited for a variety of services.

Semi-steel plug valves, which use a quarter section eccentric plug, are being offered for a variety of services by W-K-M Division of ACF Industries, Inc. They are said to be ideally suited for handling water, sewage purification plant applications and industrial slurries.

The quarter-section plug in the new valve has an especially compounded rubber covering for maximum resistance to wear, and the eccentric facing provides a tight resilient seal. Other features include

LOWEST COST PIPE INSTALLATION . . .

2" to 24" BORES . Up to 250' long.

Send COUPON Today!

Hydrauger Corp., Ltd.
681 Market St., San Francisco, Calif.
Please send, without obligation to me, the HYDRAUGER BOOKLET which shows relative costs and speeds of BORING as well as specifications of various Hydrauger models.

NAME _____
ADDRESS _____
CITY _____ STATE _____

HYDRAUGER*

Reg. U. S. Pat. Office

UNDER STREETS
UNDER FREEWAYS
UNDER GARDENS
UNDER PAVEMENT

OPEN HOLE

HY-25A

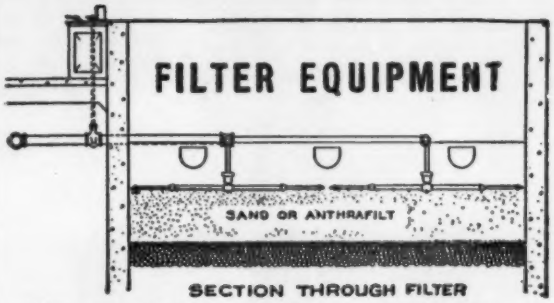
*Earth Boring Tool

AVOIDS EXCESSIVE TRENCHING

Hydrauger bored holes for pipe installation invariably reduce costs 80% to 90% by eliminating trenching and back-filling to say nothing of man-hour labor savings and safety to highway traffic.

HYDRAUGER CORP. Ltd.
681 Market Street
San Francisco, California

PALMER



SECTION THROUGH FILTER

Filter Bed Agitator Advantages

Requires an average of 40% less wash water

Eliminates mud balls

Prevents cracking and shrinking of the beds

Produces "new" sand after short period of normal operation

Enables you to increase filter runs up to 50%

Anthrafilt Advantages

Doubles the length of filter runs attainable with sand and quartz media

Requires one-half as much wash water

Filters are out of service less because of the shorter wash cycle

Coating, caking or balling with mud, lime, iron or manganese reduced to the minimum

Write for Circular

PALMER FILTER EQUIPMENT CO.
P. O. BOX 1655, ERIE, PA.

New York's **Successful "CHAIN GRATE" Incinerator**

The above Incinerator was installed in New York City's Gansevoort Refuse Displosal Plant.

Why has our Design proven Best by Test?:

- Cast steel grate surface—non-breakable trouble-free operation.
- More tuyere sections for better distribution of air.
- Front take-up is easily accessible to operator.
- Patented cast steel links, over-lapping to prevent fouling.
- Continuous discharge of refuse from grate surface.
- Applicable to largest incinerators up to 24-feet wide.
- Minimum labor and maintenance required for operation.
- No heavy stoking or cleaning of fires . . . ease of operation.

ILLINOIS STOKER COMPANY
ALTON, ILLINOIS

NOW GRAVELY Gives You Push Button Snow Removal!

• CHOICE OF 3 SNOW REMOVAL TOOLS •
Each With New Gravely Self-Starter

A new experience in snow removal—simply push the button and your Gravely Tractor is ready for the toughest snow removal job! New steering Sulky also available.
The *only* 6.6 HP Tractor that offers a choice of Snowblower, Snow Plow or Power Brush for snow removal. Choose the tool to fit your particular job!

• ONE TRACTOR — 30 ATTACHMENTS •
30 tools to choose from for year 'round grounds maintenance tasks. From 75" gang mowers to 48" Snowplow, the Gravely saves time and money all year . . . *Write for catalog . . . or "How to Solve Removal Problems" . . . TODAY!*

Ask About Our New Salt-n-Sand Spreader!

GRAVELY TRACTORS, INC.
BOX 636-K DUNBAR, WEST VIRGINIA

nickel alloy seating surfaces, full pipe area flow opening, wrench or worm gear operation, adjustable stops, open and close indicator, quarter turn operation, few parts and easy disassembly.

B. J. Gross, marketing vice-president for W-K-M, stated that the new valve requires no lubrication, is available in 150 WOG rating and in a range of sizes from 2 to 12 inches.

For additional information, write W-K-M Division of ACF Industries, Inc., Houston, Texas, or use the Post Card on Page 56. Circle No. 702.

Blacktop Spreader for Tractor Shovel

Surfacing odd-shaped areas is no chore for the maneuverable Ram blacktop spreader.

Massey-Ferguson reports that this new Ram attachment can use asphalt or oil mix, hot or cold, with crushed rock or aggregate up to ¾" in size. It also states that the spreader operates off the Work Bull 1001's hydraulic system through its own hydraulic motor and that it features independent hydraulic controls for each phase of operation.

The Ram blacktop spreader rides on its own pneumatic tires with hydraulic height adjustment and can be adjusted to spread any width up to 8 feet and any thickness up to 6 inches. The hopper has a capacity of 2 cubic yards.

Reversible twin augers are employed to clean the hopper and to assure an even spread. Standard equipment includes a screed ironing pad; a butane heater is optional. The rig is said to be particularly suitable for patching jobs or paving of alleys, driveways and parking lots. For additional information, write Massey-Ferguson Industrial Division, Block 1000 South West St., Wichita 13, Kan., or use the Post Card on Page 56. Circle No. 703.

Chapman Valve Purchased

Crane Co. of Chicago, Ill. has acquired all properties and assets of The Chapman Valve Manufacturing Company, located at Indian Orchard (Springfield), Mass. This gives Crane manufacturing facilities in the eastern part of the United States, something it hasn't had since 1941 when its Bridgeport, Conn. plant was sold.

The new acquisition, which will be known as The Chapman Valve Manufacturing Company, is a wholly-owned subsidiary of Crane. It will retain its present management and executive staff, headed by C. Goodwin Carter. Plans for the Chapman plant, as stated by T. M. Evans, Crane chairman, include manufacture of present line of all products now manufactured by Chapman for which there is adequate demand.

Universal Mounting Bracket for Street Light Controls

This latest addition to the Ripley line of street lighting control equipment is adaptable to any photoelectric streetlight-control mounting arrangement where mounting directly to the luminaire head is not practical.

Designated Model 5920, it is ⅛" hot dipped galvanized steel, measures 9" in length and 3⅜" across. The manufacturer reports that the twist lock conforms to EEI-NEMA standards and has 3 pre-wired 22" No. 10 AWG leads for connection to line, load and neutral lighting circuit. The plug assembly is protected with a neoprene jacket and maximum gasket surface area is said to be provided for photoelectric control unit.

Ripley's Model 5920 Universal mounting bracket, a single mounting base adaptable for all mounting arrangements.

For additional information, write Ripley Co., Inc., Factory St., Middletown, Conn., or use the Post Card on Page 56. Circle No. 701.

Snow Plows for Ford Trucks

Meyer Products' new snow plow for Ford 4-wheel-drive trucks features a 7-foot, reversible, spring trip blade with replaceable cutting edges and Meyer's patented Electrolift and specially designed custom mounting for Ford F-100 and F-250 trucks.

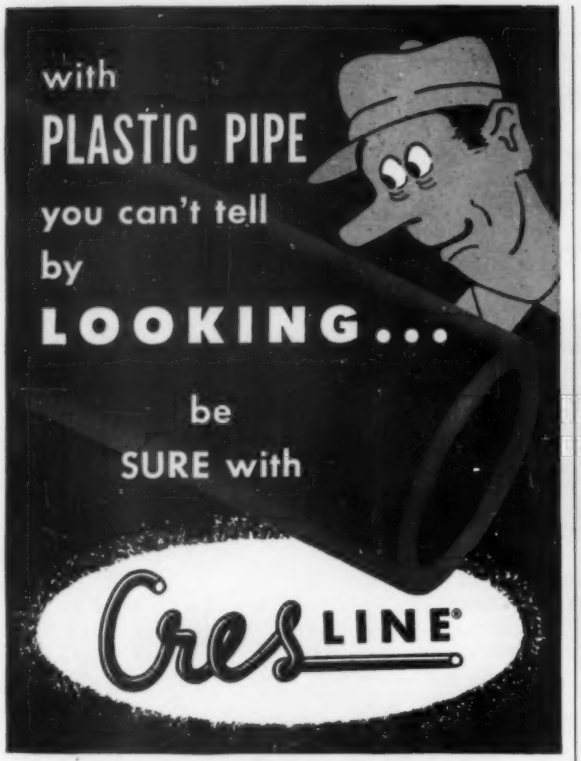
According to the Cleveland manufacturer, during the original installation, all brackets, plates and braces can be attached to the truck in approximately four hours. Between snows, the blade can be removed or replaced in minutes.

The Model ST-84 is but one in a complete line of straight or V-type plows for Jeeps, tractors and trucks. For further information, write Meyer Products, Inc., 18513 Euclid Ave., Cleveland 12, Ohio, or use the Post Card on Page 56. Circle No. 707.

Speeds, Eases, Overhead Maintenance

Street light and traffic signal maintenance, bridge painting, tree trimming, utility pole servicing, putting up and taking down decorations, spraying insecticides—municipal crews will find they can do them all at a great saving in time with the "Air Ladder."

Readily accommodated on any truck, 1½ tons or larger, the Air Ladder is hydraulically controlled, the hydraulic pump being powered



backed by **PIONEER RESEARCH** and **GUARANTEED IN WRITING**

Performance is not in the "look" of plastic pipe. It's in the ingredients, the skill with which it is manufactured, and the proof of performance through rigid tests. Crescent Plastics is a pioneer in the relatively young field of plastic pipe. Through research, we continually improve our product and find new and better raw materials. Our testing laboratory, one of the industry's leaders, checks results *before* the pipe is marketed. That's why every foot of Cresline pipe is guaranteed in writing to perform as specified.

PIONEER MEMBER OF

Before you order any kind of plastic pipe, challenge us to prove you'll do better with Cresline.

CRESCENT PLASTICS, INC.

Dept. C-9 • 955 Diamond Ave. • Evansville 7, Indiana

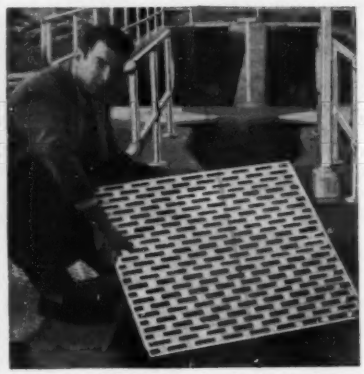
Complete Technical and Engineering Services Available

PLASTIC PIPE OF ALL KINDS FOR

WACO®

ALUMINUM WALKWAYS ARE SAFE, MAINTENANCE-FREE

Non-Corrosive, Strong and Durable—They are Valuable Assets in Water and Sewage Plants



George H. Hill, Washington Aluminum's New England representative, points out the grating's patented perforation pattern.

Washington Aluminum Walkways *provide* a lifetime of maintenance-free service — never need painting, resist rust and corrosion, provide ventilation. Their strength lies in the I-beam extrusion.

Washington Aluminum fabricates grating and other installations to specification. Consult our Engineers at point of planning. . . . No charge — no obligation! . . . an engineering service of Washington Aluminum Company, Inc.

WASHINGTON ALUMINUM COMPANY, Inc.

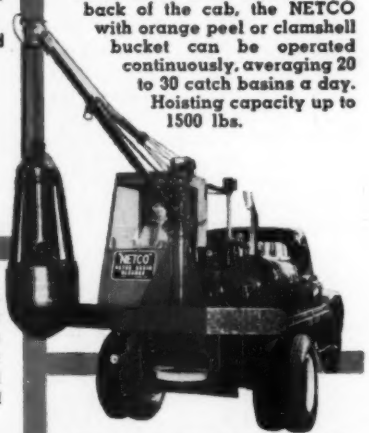
Dept. 811 • Baltimore 29, Md. • Phone Circle 2-1000

NETCO CATCH BASIN CLEANER

Is Serving Many States, Cities and Turnpikes Throughout This Broad Land

- Penn. Turnpike Comm.
- East Cleveland, Ohio
- Cumberland, Maryland
- Indianapolis, Ind.
- Lansing, Michigan
- Jersey City, N. J.
- Worcester, Mass.
- New York, N. Y.
- Boston, Mass.
- Chicago, Ill.

Easily mounted on any short wheel base truck with 8 ft. in back of the cab, the NETCO with orange peel or clamshell bucket can be operated continuously, averaging 20 to 30 catch basins a day. Hoisting capacity up to 1500 lbs.



NETCO does almost three times as many basins a day at less than half the cost per basin compared with old-fashioned manual methods.

Send for our 6-page descriptive folder

NETCO DIVISION
CLARK-WILCOX COMPANY
118 Western Avenue
Boston 34, Massachusetts

Overhead maintenance is done with dispatch with an Air Ladder on the job.

by a 6- to 12-volt motor operating off the truck battery. No power take-off unit is involved. Platform working height is 22 feet. Safe load capacity is stated to be 500 pounds. Swing arc is 170°. The operator can control the ladder from the platform. For additional information, write ROOT SPRING SCRAPER CO., 527 W. NORTH ST., KALAMAZOO, MICH., or use the Post Card on Page 56. Circle No. 705.

Opens Canadian Plant

Cataphote Corporation, leading manufacturer of reflective traffic materials, plans to open a new $100,000 plant for production of reflective glass beads and other materials at Brantford, Ontario about November 1.

According to William H. Searight, president of the Toledo, Ohio concern, the new plant will supply the growing Canadian markets, as well as the company's foreign warehouses via the St. Lawrence Seaway.

Standard Steel Elects

Harl S. Day has been named president of Standard Steel Works, Inc., North Kansas City 16, Mo., widely known manufacturer of liquid transports, road machinery, agricultural products and steel shelving.

Mr. Day was tank production manager of the Butler Manufacturing Co., following his joining that company in 1945. Later he served as Kansas City division manager, and at the time he accepted the presidency of Standard Steel Works, Inc., was sales manager, Contract Manufacturing Division of the Butler Co.

Innovations in VHF-FM 2-Way Radio

Designed for either mobile or base station use, the AEROTRON 6N15 utilizes tubes and circuits perfected for use in TV and radar.

Boasting a chassis no larger than 8½"x11", it receives loud and clear, rejects unwanted off-frequency signals through a filter, and includes such technical features as a cascode RF amplifier, gated beam limiter and push-pull RF power amplifier.

The 6N15 can be operated on any

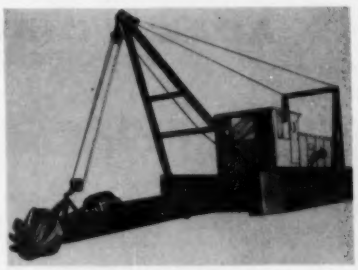
common power source—6- or 12-volt DC or 115 volts AC—without modification. It is approved by the Office of Civil Defense Mobilization under the designation P-62-N and is accepted by the FCC under the regulations of the new "split channel" specifications.

For additional information, write AERONAUTICAL ELECTRONICS, INC., RALEIGH-DURHAM AIRPORT, RALEIGH, N. C., or use the Post Card on Page 56. Circle No. 719.

Portable Dredge

American Marine and Machinery Co. reports that its "Hydra-Drive" portable dredge features a versatile new drive system that gives twice the power of previous models with variable speed swing and cutter and fewer moving parts.

A ladder having removable sections assures efficient digging at



The compact "Hydra-Drive" system enables this dredge to be completely portable and easily assembled in two days for operation.

variable depths. Fingertip control of all machinery is housed in an elevated control room, giving complete vision of dredging operations. Production model portable dredges are usually available from stock in 8" to 18" sizes on lease or sale basis. The manufacturer reports that if necessary, an additional engine can be installed in the field to drive the dredge pump in order to pump extreme distances or elevations without loss in capacity.

For additional information, write AMERICAN MARINE AND MACHINERY CO., P. O. Box 1150, NASHVILLE, TENN., or use the Post Card on Page 56. Circle No. 720.

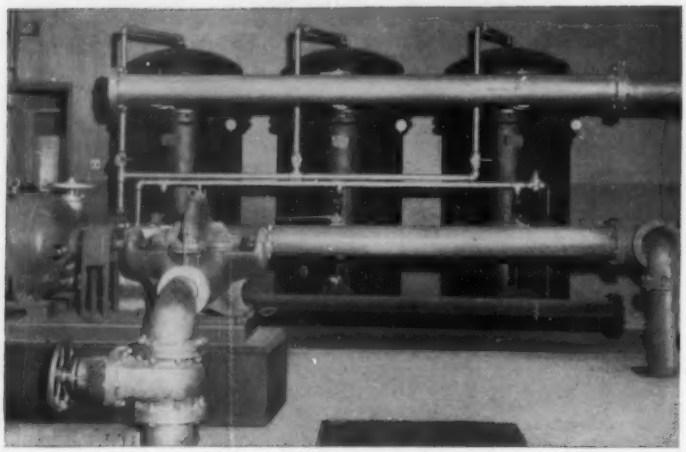
New Horn for Building Alarms

A vibratory horn to simplify the installation of emergency alarms and coded signal systems in public buildings and plants fits onto any 4-inch square electrical outlet box. Its square design, shaped to integrate effectively with the construction of modules of all modern buildings, contrasts to the circular contour of conventional vibratory horns.

Each basic horn unit is equipped with an individual volume control. Sound can be adjusted from a barely audible buzz to an attention-com-

Basic horn unit engineered for Federal Sign and Signal Corp., to simplify the installation of emergency alarms and coded signals in public buildings.

ADAMS DIATOMITE FILTERS ARE BEST...



Shown above is a typical Adams filter installation handling the entire water supply of a small eastern community. The three units are capable of handling more than 1500 gpm. with plenty of spare capacity for peak periods.

for Small Community Water Systems

Maximum filter efficiency and capacity, coupled with minimum space requirements, enable the Adams line of diatomaceous earth filters to more effectively solve small community water filtration problems. Diatomite filtration assures you a water supply of sparkling clarity... the year 'round.

Exclusive Adams Hydro-Pneumatic backwashing simplifies operation — for more complete and rapid backwash and reduced labor requirements. The Adams filter systems are compact — do not require extensive ground area, elaborate foundations and other expensive construction features.

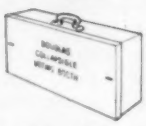
Why not investigate how an Adams system can improve your water supply. Write today—

R. P. ADAMS CO., Inc. • 202 East Park Drive, Buffalo 17, N. Y.

☆Douglas

Uni-pack

COLLAPSIBLE ELECTION BOOTHS



Packaged for easy use, convenient movement and storage!

Douglas Uni-pack provides 6'1" x 28" x 28" single stall booth yet collapses to suitcase size. Easy to carry and set up by any woman election offical. Ideal for augmenting voting facilities during rush periods. Now being used by all regional offices of National Labor Relations Board.

Vote by Ballot with DOUGLAS VOTING BOOTHS

★Small investment ★Storage and transportation costs are nil ★No breakdowns and maintenance ★No standing in line by use of plenty of low-cost units ★Only sure way of casting your personal vote

OTHER Douglas ELECTION EQUIPMENT

- Model B Collapsible Voting Booths
- All-Metal Folding Booths
- Collapsible Ballot Boxes
- Collapsible Election Tables
- Rigid Ballot Boxes
- Nested Ballot Boxes
- Voting Booth Lights
- Jury Wheels

For further information, contact your local dealer or write for FREE catalog and prices to:

DOUGLAS MFG. CORP.
DEPT. O Crete, Nebr.

★ Serving the entire United States and Puerto Rico since 1910

Good Roads MACHINERY "Jet" Spreaders

A SIZE AND STYLE FOR EVERY NEED! Ideal for salt, cinders, sand or gravel, cab operated "Jet" Spreaders provide the speed and capacity essential for fast efficient ice control on streets and highways.

Available in engine-driven, hydraulic and direct power take-off models. Width and depth of spread, and spread pattern are easily varied to meet any requirement. Standard models feature 5½ and 6 cubic yard hopper capacities... larger sizes are also available.

For complete information, see your Good Roads distributor or write:

Good Roads MACHINERY GOOD ROADS MACHINERY Corp.
MINERVA, OHIO

manding 101-03 decibels at 10 feet —louder than any previous vibratory horn.

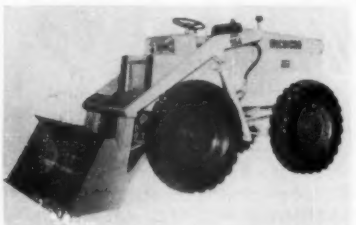
Although engineered to fit a 4-inch outlet box, the horn can be adapted to mount on existing electrical facilities such as a handy box or other outlet box of odd size. In this situation, a concealed conduit adapter plate, universally drilled for various wall box mountings, is provided. For exterior use, a weatherproof (WB) gasketed cast back box is available, doubly bossed and tapped for ½-inch conduit.

For complete data, write FOLGER M. SMITH, SIGNAL DIVISION, FEDERAL SIGN AND SIGNAL CORP., 8700 SOUTH STATE ST., CHICAGO 19, ILL., or use the Post Card on Page 56. Circle No. 721.

Integrates Divisions

Sales activities of Stardrill-Keystone Division, recently acquired by Koehring Co. of Milwaukee, Wis., have been integrated with another Koehring division, Buffalo-Springfield Co., Springfield, Ohio, according to an announcement from R. E. Burton, president of Buffalo-Springfield.

While the one division will be known as Buffalo-Springfield Co., the Stardrill-Keystone name will be retained.



Low pressure, wide base tubeless tires (1300x24) are furnished as standard equipment on the Michigan Model 55-A, although abrasive-rock tires are available.

Standard Coil Sells EL-TEC

The EL-TEC Division of Standard Coil Products Inc. has been sold and is now a New Jersey corporation. All manufacturing and development will be in the new factory at Dunellen, N. J.

The transfer of ownership included rights to corporate name of Electronic Protection Inc. and trade name EL-TEC, all patents and manufacturing rights, and FCDA and FCC assignments.

Engineering will be directed by Wm. DeVoiserre, a well-known specialist in circuitry development, and J. Becker, specialist in UHF research.

National sales will be through the E. Allen Miller Co. of Caldwell, N. J.

Names New Distributor

Colonial Motor Company, 3219 Holmes St., Dallas, Texas, is now a distributor for Keasbey & Mattison Company, Ambler, Pa., manufacturers of asbestos-cement tubular products.

Colonial will carry K&M's irrigation pipe in the following diameters: 3", 4", 6", 8", 10", 12", 14" and 16". It will be available in 150' head, 225' head, 325' head, and 450' head. The smaller diameter pipe (3" and 4") will not be obtainable in 150' head. The asbestos-cement pipe will be available in standard 13-foot lengths. It is intended for use with the patented K&M Fluid-Tite coupling.

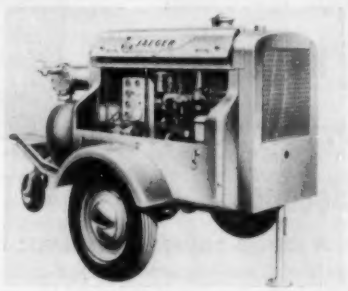
4-Wheel Drive, 1-Yard Tractor Shovel

The 26-mph, 1-yard capacity Model 55-A Michigan tractor shovel just introduced by the Construction Machinery Division of Clark Equipment Co., Pipestone Road, Benton Harbor, Mich., has four-wheel drive, power train, and all other big machine features that are standard on the five larger Michigans of this type.

Equipped with a 66.5-hp gasoline engine, the Model 55-A has a working weight of 10,000 pounds, and will lift and carry up to 7,000 pounds, providing a wide safety margin over the weight of most materials handled in 1 cubic yard amounts. According to the manufacturer, this feature assures a longer machine life, because the tractor shovel is not constantly working at or near full capacity.

Model 55-A provides a fast loading cycle with minimum dumping height of 8 feet. It has been thoroughly tested on city, county and state jobs, and has been placed in production to sell as a high quality, moderately priced, completely roadable all-wheel drive tractor shovel. For additional information, write the company, or use the Post Card on Page 56. Circle No. 720.

85-cfm Rotary Compressor



Jaeger has built its latest Model 85 rotary compressor like its big units. It has equipped it with a Continental F-162 engine developing 45hp at sea level and with a 12-volt electric starter. Standard equipment includes an hour meter, automatic blow-down valve, thermostatically actuated oil bypass valve, retractable pneumatic tired dolly wheel and fenders.

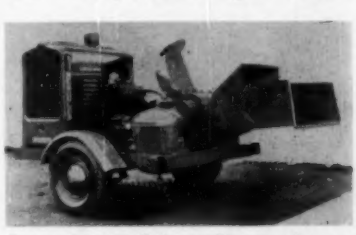
The compressor unit is a single-stage oil-cooled rotary developing 85 cfm at normal 100 psi pressure. Controls provide instant response to air demands. Pressure is held constant and speed is said to be smoothly modulated without possibility of over-run or racing of the engine.

For complete information, write THE JAEGER MACHINE CO., COLUMBUS, OHIO, or use the Post Card on Page 56. Circle No. 722.

Improved Wood Chipper

Designed and introduced by Weed Control Service, Inc., this improved weed control wood chipper is now powered by a Hercules WXLC-3 six-cylinder L-Head gasoline closed power unit, which delivers 312 foot-pounds of torque at 300 rpm and 132 hp at 240 rpm.

The manufacturer points out that this more powerful engine enables



A more powerful gasoline engine enables this wood chipper to more efficiently dispose of brush and forest slash.

BAUGHMAN SPREAD-MOBILE

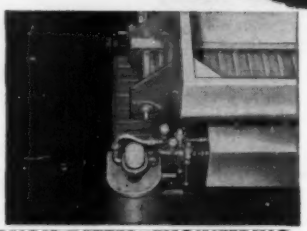
the Spreader that's Better ...for ice control Because...

1. IT OFFERS COMPLETE HYDRAULIC CONTROL.
Speed of discharge from Drag Chain Body Conveyor to Positive Drag Chain Cross Feeder is controlled by hydraulic motor. Second hydraulic motor controls speed of distribution, and width of spread.

2. EXCLUSIVE "CENTER-SPRED" DESIGN.
Permits spread in front of all four wheels; improves traction, visibility and pattern.

3. ONE-MAN CAB CONTROL.
Width of spread, amount of spread, starting, stopping—all are at driver's finger tips. Driver also controls "Safety Baffle" which dampens spread when approaching pedestrians or cars.

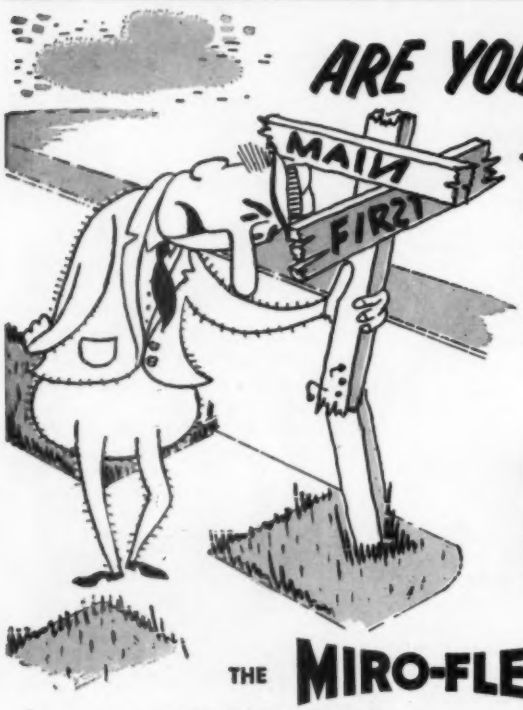
WRITE for illustrated Brochure A-408-B.



New positive drag chain cross feeder, coordinated with main body drag chain conveyor, assures positive flow of material to side mounted distributor.

BETTER SERVICE THROUGH BETTER ENGINEERING
SERVICE AND PARTS FROM 200 SERVICE BRANCHES

BAUGHMAN MANUFACTURING COMPANY, INC.
217 SHIPMAN ROAD • JERSEYVILLE, ILLINOIS



ARE YOU PROUD OF YOUR STREET NAME SIGNS?

Do your street-name signs reflect the pride of your community, and do they stand out so everyone can tell where they are? Uniform Miro-Flex Street-Name Assemblies can set you on the right track – and keep you there, even on a limited budget. There is a complete assortment of styles from which to choose, and all of them are embossed for long life – giving maximum strength, rigidity, and legibility. Send for your free copy of the Miro-Flex sign catalog and the name of your nearest source.

Embossed
MIRO-FLEX SIGNS ARE THE PRIDE OF ANY COMMUNITY...

THE MIRO-FLEX CO., INC.
1824 EAST SECOND WICHITA 7, KANSAS

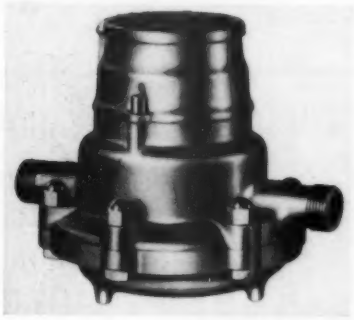
Standard Traffic Signs Available for Immediate Delivery at Northeastern Warehouse
Koontz Equipment Corporation, 325 Ohio River Blvd., Emsworth, Pittsburgh 2, Pennsylvania

the chipper to handle more easily the sudden mechanical load which results when solid material is pushed against the chipping knives mounted on a high-speed rotor. The material is reduced to small chips and blown out a discharge pipe. The engine must absorb the load increase to maintain the speed of the rotor.

Other features of this pneumatic-tired, portable chipper include an automatic spring-loaded feed plate, a built-in 40-cubic-foot air compressor which supplies compressed air for air-driven saws usually used along with chipper and a Fitchburg chipping unit 15" x 8" rotor.

For additional information, write WEED CONTROL SERVICE, INC., 2605 S.W. FIRST AVE., PORTLAND 1, ORE., or use the Post Card on Page 56 Circle No. 723.

American Water Meters Get New Frost Bottom



The new breakable bronze frost bottom for American water meters is made from a brittle type of bronze, which breaks cleanly at the same pressure as cast iron. It permits the meter to be made entirely of bronze with no dissimilar metals, yet with the sure protection of a true frost bottom. The manufacturer reports that problems of linings associated with iron frost bottoms are avoided entirely.

This new construction has been used in a limited way in American meters for 20 years with success, but is now offered in quantity production. The galvanized cast iron frost bottom is being continued for use where water conditions warrant. Additional information can be obtained from BUFFALO METER CO., INC., 2902 MAIN ST., BUFFALO 4, N. Y., or use the Post Card on Page 56. Circle No. 724.

Truck Dump Body Has New Features

Municipalities, counties, and others requiring a general utility dump body and hoist will find the "Maintainer" hoist and dump body "package" offered by Daybrook Hydraulic of particular interest.

The all-steel dump body is built to handle a 5-ton load capacity and to be installed on a one-ton truck. It features structural steel underbody construction and a full-length sub-frame for chassis support. Full width rub rails cover and protect tires. The body floor is ribbed for easy handling of sheet materials; low sides facilitate hand loading. Six-inch pockets are built into body corners for side boards. The double-acting tailgate has spreader chains.

The standard underbody hoist provides for full 45° dumping, and can be stopped, raised or lowered from any position. The hoist cylinder has spring-loaded, self-adjusting packing. Hoist and power take-off controls are reinforced-dash mounted.

For complete information and specifications, request *Bulletin Form* HBM-6-59-10M. Write DAYBROOK HYDRAULIC DIVISION, YOUNG SPRING & WIRE CORP., BOWLING GREEN, OHIO, or use the Post Card on Page 56. Circle No. 725.

Can Cut Cost of Waste Disposal

The Somat Waste Disposal System takes in refuse, garbage and paper waste, chews it instantly into finely ground, compacted pulp far less bulky than original waste—renders its odorless without the use of chemicals—and discharges it to haulaway containers for fast, easy disposal. A 12-page booklet shows how Somat can eliminate such hidden costs as theft of products and parts; waste of man-hours, space and equipment; and danger of valuable papers falling into the wrong hands.

Push-button control, automatic, compactness, space-saving, low-cost maintenance and operation are described and pictured.

The brochure lists and discusses the types of grindable waste and refuse the machine will handle. A step-by-step photo-diagram shows every stage of the operation. Case histories and installation photographs document the argument. A free copy of the brochure and full particulars can be obtained by writing WANDEL MACHINE CO., POMEROY, PA., or use the Post Card on Page 56. Circle No. 726.

Portable Rotary Pipe Cutter

Developed and field-tested by Reed Manufacturing Co., this device is said to be especially suited to pipeline maintenance and repair. It consists of a separable circular frame joined at the midsection by hinged screws and adjusting nuts. An aluminum handle is placed successively over the eight lugs on the outside of the frame and the same handle is used to tighten the cutter as cutting proceeds.

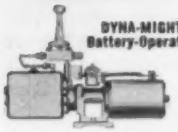
The 16" size weighs 51 pounds complete, and all of the units separate into three easily carried parts. According to the manufacturer, a minimum of digging is required since the four-wheel design requires no more than 45° to 60° of

Easy portability, fast one-man operation and clean, accurate cuts recommend this new rotary four-wheel pipe cutter for large steel and cast iron pipe from 12" to 24" diameters.

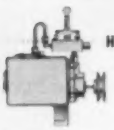
LIFT-LOWER SNOW PLOWS IN SECONDS

MONARCH

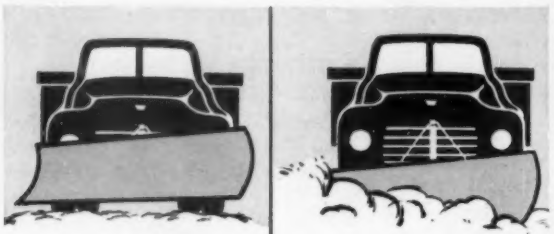
POWER HYDRAULIC CONTROLS



One man controls the plow from the cab . . . instant up-and-down action with the flick of a wrist. Snow removal is easier, faster, more economical with Monarch. See your dealer or write for illustrated folder.



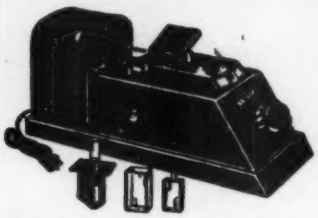
HY-LO for Jeep Fan-Belt Driven



MONARCH ROAD MACHINERY COMPANY
1331 Michigan St., N. E. — Grand Rapids 3, Michigan

KLETT SUMMERSON ELECTRIC PHOTOMETER

Adaptable for Use in Water Analysis



Can be used for any determination in which color or turbidity can be developed in proportion to substance to be determined.

KLETT MANUFACTURING CO.
179 East 87th Street New York, N. Y.

NOW!

a NEW solid-color PVC
POLY-CONE*

tough, durable, no seams, will not CRACK, TEAR or BREAK!

This new SAFE-T-CONE never needs repainting. Just wash it with soap or solvents. Made of polyvinyl-chloride to produce the toughest, *most durable cone on the market.* Outlasts ordinary cone many times . . . . without upkeep!

**Polyvinyl-chloride*

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All-Rubber SAFE-T-CONES available in 3 SIZES!

Painted or Reflectorized ALL RUBBER
Regular all-rubber SAFE-T-CONES, now better than ever. Painted standard red and yellow or reflectorized.

Plastic or All-Rubber FLUORESCENT
New Poly-Cones and All-Rubber cones available in brilliant orange-red fluorescent for extra brilliance, day or night.

SAFE-T-CONES made only by **Radiator Specialty Co.**
Charlotte, N. C.

"FOR A DELIGHTFUL SUMMER VACATION"

Sea Castle
Apartment Motel
on the GULF of MEXICO
OF TREASURE ISLAND

Matchless Luxury—Magnificent Facilities at Moderate Rates

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"Restaurants adjacent - Churches & Shopping nearby"
Write for Brochure and Rates.

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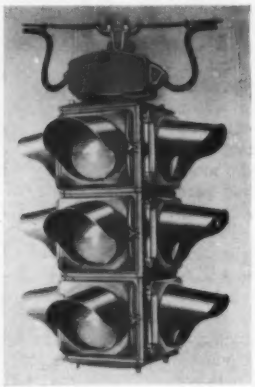
St. Petersburg, Fla

handle swing, and only a 6" to 8" channel is needed under the pipe.

A pipe guide automatically aligns the cutter for a right angle cut, and the hinged adjusting screw permits the cutting wheels to adapt to out-of-round pipe without loss of cutting efficiency. Patented pins enable the specially designed cutting wheels for steel or cast iron pipe to be quickly interchanged. The cutter is manually operated. For additional information, request *Bulletin* RCW-1; write REED MFG. CO., ERIE, PA., or use the Post Card on Page 56. Circle No. 727.

Traffic Signal Disconnect Hanger



Crouse-Hinds' new disconnect hanger makes possible the taking down of one traffic signal and the substituting of another in minimum time.

Cities having a regular program for cleaning and painting traffic signals will find the Crouse - Hinds Type TL3506 disconnect hanger indispensable. It simplifies installation since it permits hanging the signal after all other electrical work has been completed.

The hanger replaces the usual wire outlet and serves as a through feed device or double wire outlet when more than one signal is used on the same span wire. Connections between the signal and its overhead cable are made through a multicircuit jack connector mounted within the hanger. Thus, the signal can be removed from the hanger without the use of tools, simply by disconnecting it.

For complete information, write CROUSE - HINDS CO., SYRACUSE 1, N. Y., or use the Post Card on Page 56. Circle No. 728.

Le Roi Improves the Tractair

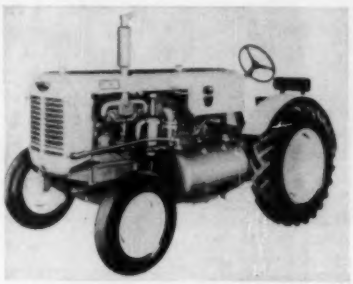
The numerous engineering and design changes announced for the Le Roi 125 Tractair, a combination tractor-air compressor which provides 125 cfm of free air compressed to 100 psi, are aimed at improving maintenance and increasing operating efficiency.

Included among the unit's new features is a longer hood that provides protective covering for the battery and also brings the instrument panel closer to the operator. All gauges are grouped on the one panel and are easy to read.

Crankcase design of the 4-cylinder engine and 2-cylinder compressor on the new Tractair has eliminated the need for two oil pumps. One crankcase, crankshaft and pressure lubrication system serve both engine and compressor. An automotive replaceable element-type oil filter is now used, making changes simple, less costly.

Both the overhead valve engine and the compressor have replaceable wet-type ignition system, for long wear and low upkeep. The distributor-type ignition system, increased from 6 to 12 volts aids cold weather starting. Operation of the Tractair is further simplified by combining the ignition and starter switches.

To learn of the many other modifications, and of a complete line of attachments available for the new model, write SALES PROMOTION DEPT., LE ROI DIVISION, WESTINGHOUSE AIR BRAKE CO., MILWAUKEE 1, WIS., or use the Post Card on Page 56. Circle No. 729.



The 125 Tractair is equipped with a Le Roi single-stage, piston-type compressor built integrally with a 42-hp engine.

Unclog Culverts Quickly

A recent offering by Topeka Hiway Mower, Inc., this hydraulic earth auger assembly enables maintenance crews to quickly open clogged culverts.

The culvert-cleaning attachment consists of the drive box, a 20' drive tube, 10' tube extension; two 10' augers, one 6" and one 9" in diameter. In addition to boring action, there is said to be a certain amount of "whip" to the augers, making it possible to clean tubes larger in diameter than the augers themselves.

The horizontal auger and drive box attach to the side of the Topeka Forty Mile mower and, according to the manufacturer, can be mounted or dismounted in 10 minutes. The auger uses the same hydraulic system as the mower. It can be operated from the front or rear of the drive box, and by augering from both ends, culverts up to 60' in length can be cleared.

This device removes all types of soil, sand or mud. For further details, write TOPEKA HIWAY MOWER, INC., 623 E. 7TH ST., TOPEKA, KANS., or use the Post Card on Page 56. Circle No. 730.

Mounted on the Topeka mower, the auger can be driven to and from job sites at regular traffic speeds.

ABOUT PEOPLE

W. F. Burke has joined the Liquid Meter Division of **Neptune Meter Company,** New York 20, N. Y., according to an announcement made by John J. Carroll, vice president of sales. Mr. Burke will assist C. W. Fisher, distribution sales manager, in supervising, planning and coordinating all phases of service to the company's water, petroleum and industrial meter customers.

W. F. Burke

Hamilton Kent Mfg. Co., Kent, Ohio, manufacturers of flexible sewer pipe couplings and acid-resistant pipe coating, has appointed H. S. Allen to the post of vice president. He will be responsible for field technical services of the company's three manufacturing activities, working out of plants in Kent, Ohio, Seattle, Wash., and Toronto, Ontario and from sales offices in both the United States and Canada.

H. S. Allen

George Ames, named field manager, pipe sales, for **Gar Wood Industries, Inc.,** Wayne, Mich., will represent the complete Gar Wood-Buckeye line of ditchers and will specialize in field application of the firm's pipeline equipment. Although headquarters will be Findlay, Ohio, Mr. Ames expects to spend most of his time in the field—on pipeline spreads in every part of the country.

Willis Ditmanson, who has been named national parts and service manager for **Motorola Communications & Electronics, Inc.,** wholly owned sales and service subsidiary of Motorola, Inc. will coordinate on a national scale the Motorola Communications Service Organization which provides contract maintenance and other service aids.

David Laird, a recent addition to the field engineering staff of **Line Material Industries,** Milwaukee, Wis., will headquarter at Bismarck, N. D. and serve customers in eastern Montana and the western Dakotas.

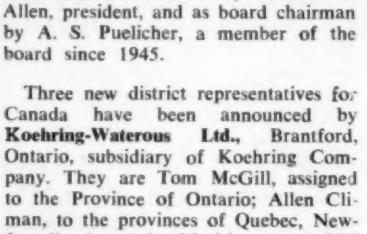
By consolidating the western Pennsylvania and Ohio areas, **The Cooper-Bessemer Corp.,** Mt. Vernon, Ohio, has created a new sales territory, The East Central District, which will be headed by F. M. Devin, vice president and district manager. Working under Mr. Devin as branch managers are R. L. Reynolds, Grove City, Pa.; J. R. Craine, Mount Vernon, Ohio; and J. M. Brannaman, Pittsburgh, Pa.

Another announcement made by Grant C. Woodward, Cooper-Bessemer general sales manager, is that of the promotion of Laurence B. Hume to the post of assistant manager Power Engine Sales.

Samuel Rautbord, president of **American Photocopy Equipment Co.,** Evanston, Ill. has announced the appointment of three vice presidents: Leo J. Stuckens, director of photographic products, Evanston; Edwin A. Matousek, general manager, photo paper products division, St. Louis, Mo.; and Francis D. De Maio, general manager of Apeco of Canada, Ltd., Toronto.

Poor health has forced W. L. Litle to resign as chairman of the board of directors of the **Bucyrus-Erie Co.,** South Milwaukee, Wis. He is succeeded as chief executive officer by Robert G. Allen, president, and as board chairman by A. S. Puelicher, a member of the board since 1945.

Three new district representatives for Canada have been announced by **Koehring-Waterous Ltd.,** Brantford, Ontario, subsidiary of Koehring Company. They are Tom McGill, assigned to the Province of Ontario; Allen Climan, to the provinces of Quebec, Newfoundland and the Maritimes; and Cliff Nicholson, to the western provinces of British Columbia, Alberta, Saskatchewan and Manitoba.



J. C. Elmburg **G. R. Anderson**

Fairbanks, Morse & Co. has named John C. Elmburg vice president and general manager of its Pump & Hydraulic Division, one of four newly created operating divisions, and Gordon R. Anderson vice president and general manager of the Beloit Division, according to announcements made by Robert W. Kerr, president of the Chicago headquartered firm.

Mr. Elmburg will have complete responsibility for the production and marketing of the company's entire line of pumps and water systems made in plants at Kansas City, Kans., Stuttgart, Ark., St. Louis, Mo., and Pomona, Calif. The Pump & Hydraulic Division will also market the F-M large pumps made at Beloit, Wis.

In his post, Mr. Anderson will have full responsibility for the Beloit operation. This will include production and sales of diesel engines, locomotives, compressors, magnetos and rewind starters. He will also direct the manufacture of large pumps and electrical equipment which will be marketed by other divisions of the company.

The Preload Company, Inc., New York 16, N. Y., has announced the appointment of J. J. Closner as president. A member of the Preload organization since 1949, Mr. Closner has served in various capacities, including those of southwest district manager, assistant general manager, and vice president in charge of sales and operations.

J. J. Closner

Charles O. Huntress, whose appointment as a district sales manager at **Smith & Loveless, Inc.,** Lenexa, Kans., was recently announced, will work directly with company representatives on special projects or whenever a factory representative is required.

The election of Jack W. Pratt and Berne A. Schepman as vice presidents of Process Engineers' Division of **The Eimco Corp.,** Salt Lake City 4, Utah, was announced recently by Joseph Rosenblatt, president of the corporation.

Willard F. Rockwell, Jr., president of **Rockwell Mfg. Co.,** Pittsburgh 8, Pa., has been re-appointed to serve on the Advisory Council of the United States Committee for the United Nations.

Carl A. Peterson has been named director of marketing for **McCulloch Corporation,** Los Angeles 45, Calif., prominent manufacturer of power chain saws, outboard motors and other internal combination products.

At its recent annual meeting in Washington, D. C., the **American Society of Civil Engineers** installed new officers elected for the year 1959-60. Heading the list was Frank A. Marston, Boston civil engineer and partner in the consulting engineering firm of Metcalf & Eddy, who was installed as the 91st president of the 107-year-old engineering society. He succeeds Francis S. Friel of Albright & Friel, Inc., consulting engineers, Philadelphia.

Driver Sues City For Car Damages

A claim for $10,000 against the City of [redacted] was filed yesterday by [redacted] for personal injuries and damages to his car in a mishap Aug. 16 when it hit a barricade.

The car hit a barricade which the claimant says was "owned, directed and maintained" by the city. The barricade had no warning lights.

[redacted] was severely injured and his foreign-make sports type car was damaged extensively, he asserts.

[redacted] claims he was driving west in [redacted] m. when an-

Avoid Costly Suits and Damaging Headlines . . .

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Dietz VISI-FLASH *Trade Mark

No. 697

Large double-faced 7" lens provides brilliant flashing light to both sides — no blind spots. Operates on 1 or 2 batteries with life of 750 hours each. When used as a single direction light, polished aluminum reflector doubles brilliance.

Use the DIETZ 3-way Hazard Warning System

Use Dietz Torches to show what the hazard is.

Dietz Flare Torches fully illuminate danger in any weather. Burn over 40 hours on low-cost kerosene.

Use Dietz Lanterns to outline hazard boundaries.

Show exact location, extent and boundaries of hazard area. Burn brightly and steadily up to 75 hours.

Use Dietz Visi-flashes to alert approaching traffic.

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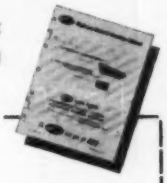

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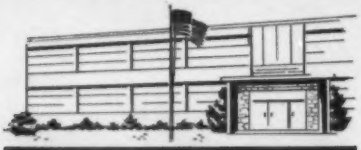

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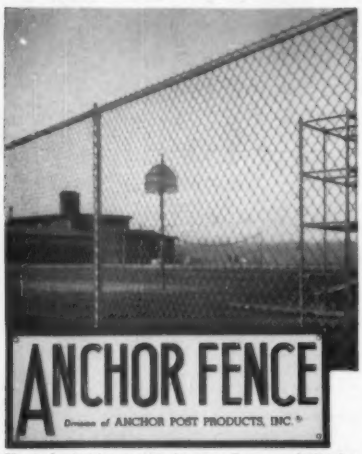

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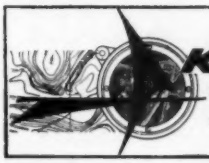

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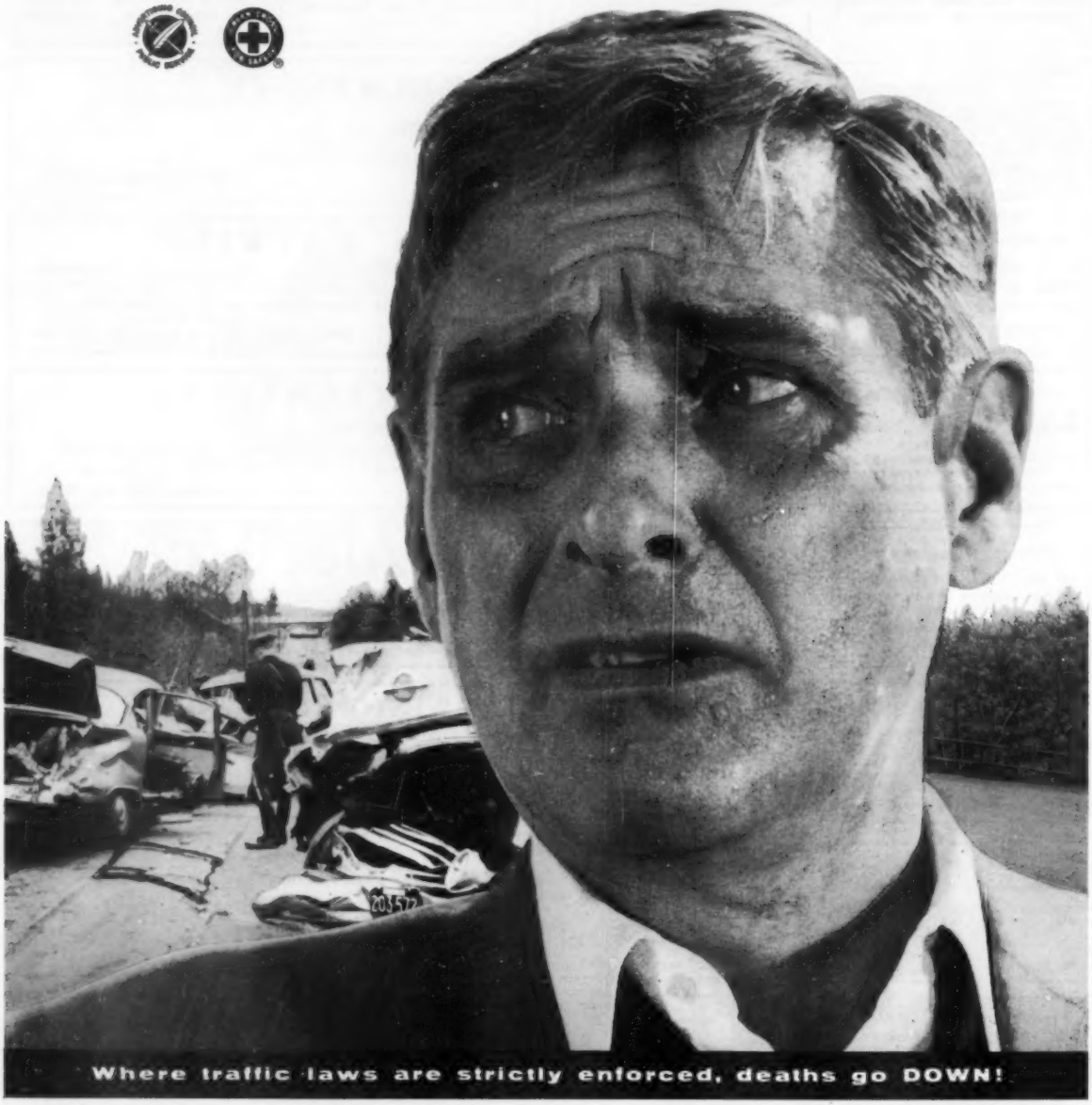
"I wish I could have done something to help . . ."

You can do something about traffic accidents! Drive safely yourself—obey the law. Sure. But you can do a lot *more!* Traffic accidents affect *everybody.* Reducing them is a community problem. Its solution calls for systematic, organized effort and cooperation with public officials—for teamwork and leadership. Here is where *you* can help. Join with others who are working actively to promote safe driving and secure strict enforcement of all traffic laws. Make your influence count. *Support your local Safety Council!*



Where traffic laws are strictly enforced, deaths go DOWN!

Published in an effort to save lives, in cooperation with the National Safety Council and The Advertising Council.

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NO. 12 WORKS in rough going at a steady pace!

Onondaga County Highway Department, Jamesville, New York, relies on Cat No. 12 Motor Graders for all its grading work. Here's one of them on a typical job—widening road from 18 to 24 feet. In 8-hour days, its scarifying and grading production averaged 380 feet a day. Stanley Bronner, who is experienced in operating most other make graders, says: "The No. 12 is far superior. It has better traction, better visibility and works in the toughest going at a steady pace."

To match your requirements, Caterpillar offers three modern, heavy-duty Motor Graders. There's the 75 HP, 20,805 lb. No. 112, or the 115 HP, 23,000 lb. No. 12. And for big jobs, the new 150 HP, 29,280 lb. Turbocharged No. 14—the most versatile big grader ever developed, recommended for everything from the roughest jobs to the finest grading. Each is designed to do more work at lower cost with less down time than any other unit in its class.

Public records from communities all over the country prove that the low total cost of Cat Motor Graders makes them the best investment for taxpayers' dollars. Get these facts, which cover yearly operation and maintenance, from your Caterpillar Dealer. See for yourself how a Cat Motor Grader is your best buy!

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

4 OF THE NO. 12'S MANY FEATURES THAT PAY OFF IN LOW TOTAL COST!

Mechanical controls (standard) offer positive action, make blade adjustments precise. Powered right from the engine, they give a speed and range of blade movements that no other unit can match.

Preco Automatic Blade Control (optional) is available only on Cat Motor Graders. Now transistorized for freedom from maintenance and adjustment, it controls blade slope to an accuracy of within ⅛ inch in 10 feet, regardless of position of grader or unevenness of terrain. Fine for all types of grading.

Unequalled visibility results from the No. 12's dash-mounted lift gears and low frame design. While seated, the operator has an unobstructed view of the critical areas at the front wheels, toe of blade and circle.

Exclusive oil clutch provides up to 2,000 hours without adjustment—the equivalent of about 12 months of "adjustment-free" operation.

CATERPILLAR

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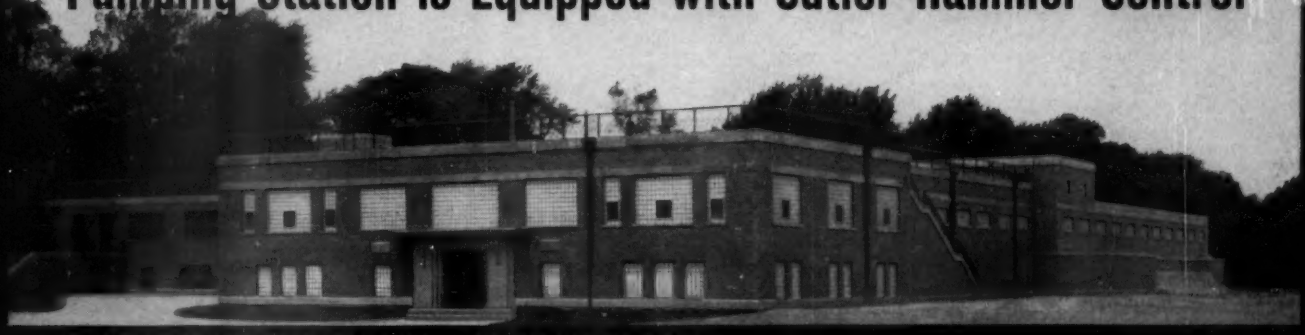
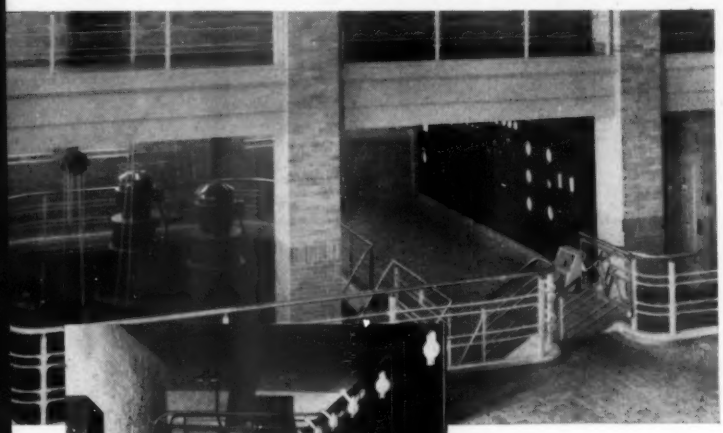
BUY LOW TOTAL COST—
BUY CAT MOTOR GRADERS

"AS SPECIFIED" Wilmette's Water Treatment Plant and Pumping Station is Equipped with Cutler-Hammer Control

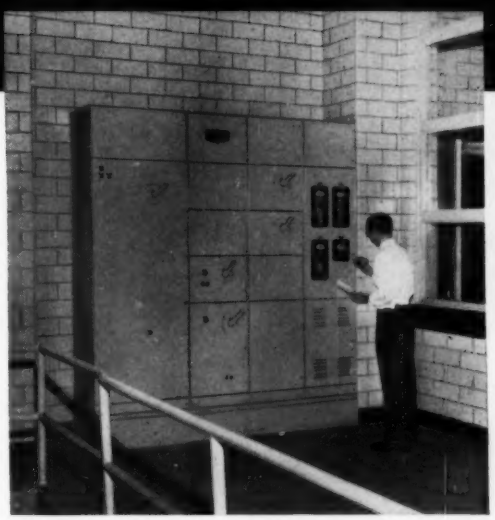


WILMETTE, ILLINOIS WATER TREATMENT PLANT & PUMPING STATION
Capacity: 15,000,000 gallons per day.
Superintendent of Public Works: Mr. A. Lund
Chief Operator: Mr. W. W. Frye
Consulting & Design Engineers: Alvord, Burdick & Howson
Electrical Contractor: Sievert Electric Company

Main Entrance and pump room New vertical type 50 Hp low lift pumps and 300 Hp high lift pumps were installed in the existing pump room. The operator's panel was modernized to monitor both the new and existing pumping equipment.



Main Control center Cutler-Hammer Automatic Reduced Voltage Starters for the new low and high lift pumps and existing horizontal type pumps are grouped in the main control room located directly behind the operator's panel.



Auxiliary Control center A new four-section Unitrol® provides a compact control center for the new vertical type Wash Water Pump, Drain Pumps, Breaker Panel Disconnect, and custom-built meter unit.

The Wilmette, Illinois Water Treatment Plant and Pumping Station is typical of scores of Municipal Water Works which recently have been expanded to keep pace with their rapidly growing communities. Here the new 9,000,000 gallon per day addition has more than doubled the capacity of the plant which was built during the middle thirties. And in both instances Cutler-Hammer Control was installed "as specified" to direct and protect the electric motor driven pumps and equipment.

This repeated specification and selection of Cutler-Hammer Control is indicative of the users satisfaction with its performance during the past twenty-five years, and confidence in its operation in the future . . . Cutler-Hammer Control is built better to last longer.

Further, it pays to install Cutler-Hammer Control because it never becomes an "orphan." Complete factory records are maintained so that whenever pumping facilities are expanded the control equipment "grows" without having to re-engineer the total job. This feature alone has saved thousands of dollars for many rapidly growing municipalities.

Be sure you have the latest facts on Cutler-Hammer Control . . . its many features assure better plant design, important savings during installation, and dependable trouble-free operation. Write Dept. W203, Cutler-Hammer Inc., Milwaukee 1, Wisconsin.

CUTLER-HAMMER CONTROL C-H

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$7.50 / hour operates 2 Michigans

Cost averages 20,000 hours, hundreds of different jobs, including plowing, loading of record snow

It all started January 16. Temperatures dropped to near zero. The wind whipped up. Snow began to fall. By dusk, the blizzard had dumped 17 inches on the ground, level measure. Drifts were 6 and 8 ft deep—and growing. Traffic was halted throughout the city—South Bend, Indiana.

Yet, this was only the beginning. By the end of the month, *45.1 inches had been measured.* It was the heaviest snow month, *by 10 inches*, in the 65 year records of the U.S. Weather Bureau in South Bend! A terrific workout was given the City's entire equipment fleet.

Work 18 straight 24-hour days

Among this fleet were two veteran four-wheel-drive Model 75A Michigan Tractor Shovels. These units worked continuously, 24 hours a day, for 18 straight days. They helped clear intersections. They plowed snow too deep for graders and truck plows. They loaded windrows in the downtown area. Their speed and versatility helped the City Street Department post an enviable record—despite high winds, subzero temperatures, and the deep drifts, not a missed garbage collection, milk delivery, or stuck emergency vehicle.

No repairs needed

"Our Michigans did a fine job!" says Dan Richardson, City Street Commissioner. "In the 18 days of continuous work, they stopped only for refueling and changing operators—yet, despite the long hours of work and exposure to moisture, cold and wind, we didn't have to do a thing repair-wise."

Cost includes wages, maintenance depreciation

Operating costs, overall, have also been exceptionally low. The City of South Bend has had the two Michigans for years—one almost six years; the other, almost four. In 20,000 work hours, total, they have had virtually no downtime. Major repairs, for instance, have cost only $1,500—*$2.88 per machine per week!* Tires on the newer machine are original . . . the City sets aside $5 per machine per week for replacement. Other costs, according to department records, have averaged only $3.55 per hour—*including* wages ($1.85), fuel, oil, maintenance, depreciation ($1.00 per hour), and insurance.

Jobs done? Literally hundreds of different kinds. Snow removal. Street rebuilding. Truck-loading of stockpiled gravel, fill dirt, cinders, and salt (5 yd trucks in 2 minutes). Back-filling. Street cleanup. Retrieving jammed sewer buckets. Extinguishing landfill fires. Loading broken concrete.

"No matter *what* the assignment," says Commissioner Richardson, "our experience has proved you can depend on a Michigan Tractor Shovel to get there fast, do the work fast, and without trouble!"

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Construction Machinery Division

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